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Analysis of Demand and Supply for Secondary Fiber in the U.S. Paper and Paperboard Industry. Vol. 3

Arthur D. Little, Inc.

Prepared For
Environmental Protection Agency

March 1976

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ANALYSIS OF DEMAND AND SUPPLY FOR SECONDARY FIBER IN THE U.S. PAPER AND PAPERBOARD INDUSTRY

Volume Three - Appendices

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Washington, D.C. 20460

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Attention: Project Officer
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16. Abstracts

This report will be of interest to all concerned with the economics of the pulp, paper and paperboard industry. Although no formal model of the industry is developed, a number of economic evaluations are presented. Moreover, the report presents an extensive compilation of technical and economic data on the U.S. Pulp and Paper Industry with specific attention to the role of secondary fiber. This data provides an assessment of technical and economic potential for increased secondary fiber use in the manufacture of paper and paperboard.

The report is divided into 10 Chapters plus appendix material. These chapters are as follows: (1) Summary; (2) Introduction; (3) Characteristics of the Paper Industry; (4) Wood Resource Considerations; (5) Characteristics of the Waste Paper Industry; (6) Waste Paper Costs; (7) Availability of Waste Paper;

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(8) Substitutability of Waste Paper; (9) Process Economics; and (10) Potential for Secondary Fiber Use: 1973-1983. The Appendix (Volume 3) contains six sections: (A) Regional Industry Data; (B) Supporting Data for Pulpwood; (C) Supporting Data for Waste Paper; (D) Supporting Data for Process Economics; (E) Glossary; and (F) U.S. Associations in the Paper and Allied Trades.

Volume 1 (Chapters 1-8 and 10 will be of most use to those seeking an overall appraisal of recycling and its role in the industry. Volume 2 (Chapter 9) contains detailed data on the process economics of various subsectors of the paper and paperboard industry.

Process economic data is provided for virgin, secondary fiber, and blend mills for one or more grades of paper, board, or pulp within each of the following sectors of the industry: containerboard; groundwood papers; tissue and other machine creped paper; folding boxboard; printing and writing papers; industrial packaging converting and miscellaneous papers; construction papers; market pulp; and slush pulp. Volume 3 will be of interest only to those groups seeking a more comprehensive understanding of the way in which the various process economic tabulations were compiled.

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APPENDIX A-1

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP

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TABLE A-1-1

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONTAINERBOARD

Region	State	City	Company	NI/I	Product	Capacity
New England	Maine	Gardiner	Yorktown Paper Mills of Maine, Inc.	NI	Comb. kraft board	80
	New Hampshire	Berlin	Brown Company	I	Corr. medium	240 (290)
		Groveton	Groveton Papers Co.*	I	Corr. medium	300 (650)
		Nashua	Brown Products Inc.	NI	Corr. medium	6
		West Hopkinton	USM Corp.	NI	Chipboard	75
	Massachusetts	Haverhill	Haverhill Paperboard Corp.*	NI	Chipboard	(280)
		Lawrence	Pleasant Valley Paper Mills	I	Chipboard	(150)
	Connecticut	East Hartford	The Burnside Co., Inc.	NI	Comb. kraft board	20
		Uncasville	Connecticut Paperboard Co.	NI	Corr. medium	110
		Versailles	Federal Paperboard Co.	NI	Linerboard	205
Middle Atlantic	New York	Brownville	Latex Fiber Industries*	NI	Comb. kraft board	(60)
		Cornwall	Cornwall Paper Mills Co.	NI	Corr. medium	200
		Lockport	Beaverboard Co., Inc.	NI	Comb. Linerboard	100
		Mechanicville	Saratoga Board Mills Corp.	I	Corr. medium	250
		North Tonawanda	Boundary Paper Mills Inc.	NI	Linerboard	45
		Piermont	Clevepak Corp.*	NI	Linerboard	(160)
		Walloomsac	Columbia Corp.	NI	Chipboard	100
		Warrensburg	Warrensburg Board & Paper Corp.	NI	Corr. medium	65

TABLE A-1-1 (Cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONTAINERBOARD

Region	State	City	Company	NI/I	Product	Capacity
Middle Atlantic (cont)	New Jersey	Camden	Kaiser Gypsum Co., Inc.	NI	Comb. kraft boards	100
		Clifton	Whippany Paper Board Co.	NI	Linerboard	350
		Whippany	Whippany Paper Board Co.	NI	Containerboard	1000
	Pennsylvania	Delaware Water Gap	Packaging Corp. of America	NI	Chipboard	100
		Philadelphia	Crown Paper Board Co., Inc.	NI	Chipboard	85
		Philadelphia	Connelly Containers Inc. of Philadelphia	NI	Corr. medium	150
		Reading	Beacon Paper Mills Inc.	NI	Corr. medium	30
			Interstate Intercorr Corp.	NI	Corr. medium	100
		Riegelsville	Whippany Paper Board Co.	NI	Containerboard	175
		Williamsburg	Westvaco Corp.	NI	Corr. medium	215
		York	St. Regis Paper Co.	NI	Corr. medium	325
East North Central	Ohio	Baltimore	Crown Zellerbach Corp.	NI	Corr. medium	190
		Brecksville	Tecumseh Corrugating Box Co.	NI	Corr. medium	70
		Cincinnati	Container Corp. of America*	NI	Linerboard	(120)
		Cincinnati	Mead Corp.	NI	Chipboard	165
		Circleville	Container Corp. of America	NI	Corr. medium	300
		Coshocton	St. Regis Paper Co.*	NI	Corr. medium	(145)
			Stone Container Corp.*	I	Corr. medium	(550)

TABLE A-1-1 (Cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONTAINERBOARD

Region	State	City	Company	NI/I	Product	Capacity
	Ohio (cont'd)	Franklin	Maxwell Paper Corp.	NI	Corr. medium	200
		Lancaster	Loroco Industries Inc.	NI	Linerboard	100
		Masillon	Cleaners Hanger Co.	NI	Linerboard	n.a.
			Greif Board Co.	NI	Linerboard	90
			Stark County Paper Co.	NI	Chipboard	30
		Middletown	Middletown Paperboard Co.	NI	Kraft board	100
		Rittman	Packaging Corp. of America	NI	Containerboard	600
		Steubenville	Federal Paperboard Co.	NI	Corr. medium	171
	Indiana	Brownstone	Kieffer Paper Mills Inc.	NI	Chipboard	125
		Eaton	Clevepak Corp.	NI	Chipboard	100
		Carthage	Container Corp. of America	I	Corr. medium	96
		Newport	Inland Container Corp.	NI	Corr. medium	350
		Terre Haute	Weston Paper & Mfg. Co.	I	Corr. medium	370
	Illinois	Alton	Alton Box Board Co.	I	Corr. medium	800
		Chicago	Container Corp. of America*	NI	Containerboard	(140)
		Joliet	Prairie State Paper Mills	NI	Kraft products	150
	Michigan	Constantine	Simplex Industries, Inc.	NI	Chipboard	50
		Filer City	Packaging Corp. of America	I	Corr. medium	400
		Monroe	Consolidated Packaging Corp.*	NI	Corr. medium	(815)

TABLE A-1-1 (Cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONTAINERBOARD

Region	State	City	Company	NI/I	Product	Capacity
	Michigan (cont'd)	Monroe	Union Camp Corp.	NI	Containerboard	300
		Ontonagon	Hoerner Waldorf Corp.	I	Corr. medium	275
		Otsego	Menasha Corp.	I	Corr. medium	331
	Wisconsin	DePere	U.S. Paper Mills Corp.	NI	Chipboard	50
		Green Bay	Green Bay Packaging, Inc.	I	Containerboard	300
		Tomahawk	Owens-Illinois, Inc.	I	Corr. medium	620
		Wisconsin Rapids	Consolidated Papers, Inc.*	I	Containerboard	(1045)
West North Central	Minnesota	St. Paul	Hoerner Waldorf Corp.	I	Corr. medium	(750)
	Iowa	Fort Madison	Consolidated Packaging Corp.	I	Corr. medium	150
	Kansas	Hutchinson	Packaging Corp. of America	NI	Containerboard	165
		Lawrence	Kansas Fibreboard Inc.	NI	Containerboard	100
South Atlantic	Delaware	Wilmington	Container Corp. of America	NI	Corr. medium	90
	Maryland	Baltimore	Chesapeake Paperboard Co.	NI	Chipboard	230
	Virginia	Big Island	Owens-Illinois Inc.	I	Corr. medium	550
		Covington	Westvaco Corp.*	I	Containerboard	(1350)
		Hopewell	Continental Can Co.*	I	Containerboard	(1060)
		Lynchburg	Mead Corp.	I	Corr. medium	375
		Riverville	Virginia Fibre Corp.	I	Corr. medium	600

TABLE A-1-1 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONTAINERBOARD

Region	State	City	Company	NI/I	Product	Capacity
	Virginia (cont'd)	West Point	Chesapeake Corp. of Virginia	I	Containerboard	730
	West Virginia	Halltown	Halltown Paperboard Co.	NI	Chipboard	160
		Wellsburg	Banner Fibreboard Co.	NI	Linerboard	75
	North Carolina	Plymouth	Weyerhaeuser Co.	I	Containerboard	1240
		Roanoke Rapids	Albemarle Paper Co.	I	Linerboard	410
			Federal Paperboard Co.	NI	Chipboard	78
		Sylva	Mead Corp.	I	Corr. medium	300
	South Carolina	Charleston	Westvaco Corp.	I	Linerboard	1870
		Florence	South Carolina Industries, Inc.	I	Linerboard	640
		Georgetown	International Paper Co.*	I	Containerboard	(1675)
		Hartsville	Sonoco Products Co.	I	Corr. medium	800
	Georgia	Augusta	Continental Can Co.*	I	Containerboard	(725)
		Brunswick	Brunswick Pulp & Paper Co.*	I	Containerboard	400
		Cedar Springs	Great Northern Paper Co.	I	Linerboard	1700
			Great Northern Paper Co.	I	Corr. medium	400
		Krannert	Georgia Kraft Co.	I	Linerboard	1600
		Macon	Georgia Kraft Co.	I	Containerboard	900
		Port Wentworth	Continental Can Co., Inc.	I	Linerboard	625
		Riceboro	Interstate Paper Corp.	I	Linerboard	550

TABLE A-1-1 (Cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONTAINERBOARD

Region	State	City	Company	NI/I	Product	Capacity
	Georgia (cont'd)	Savannah	Union Camp Corp.	I	Containerboard	2800
		St. Mary's	Gilman Paper Co.*	I	Kraft board	320(1090)
		Valdosta	Owens-Illinois	I	Linerboard	900
	Florida	Cantonment	St. Regis Paper Co.	I	Linerboard	580
		Fernandina Beach	Container Corp. of America	I	Containerboard	1700
		Jacksonville	Alton Box Board Co.	I	Linerboard	625
			St. Regis Paper Co.	I	Linerboard	(1300)
		Panama City	International Paper Co.*	I	Containerboard	(700)
		Port St. Joe	St. Joe Paper Co.	I	Linerboard	1200
East South Central	Kentucky	Hawesville	Wescor Corp.	I	Corr. medium	300
	Tennessee	Counce	Tennessee River Pulp & Paper Co.	NI	Linerboard	750
		Harriman	Mead Corp.	I	Corr. medium	200
		Knoxville	Southern Extract Co.	I	Corr. medium	160
		New Johnsonville	Inland Container Corp.	I	Corr. medium	450
	Alabama	Brewton	Container Corp. of America	I	Linerboard	900
		Mahrt	Alabama Kraft Company	I	Containerboard	975
		Mobile	Stone Container Corp.	NI	Linerboard	135
		Montgomery	Union Camp Corp.	I	Linerboard	900
		Pine Hill	MacMillan Bloedel Inc.	I	Linerboard	1000

TABLE A-1-1 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONTAINERBOARD

Region	State	City	Company	NI/I	Product	Capacity
	Alabama (cont'd)	Stevenson	Mead Corp.	I	Corr. medium	650
	Mississippi	Monticello	St. Regis Paper Co.	I	Linerboard	1150(1600)
		Vicksburg	International Paper Co.*	I	Linerboard	(1050)
West South Central	Arkansas	Morrilton	Arkansas Kraft Corp.	I	Linerboard	420
	Louisiana	Bastrop	International Paper Co.	I	Corr. medium	560
		Bogalusa	Crown Zellerbach Corp.	I	Containerboard	1350
		DeRidder	Boise Southern Co.	I	Containerboard	900(2225)
		Hodge	Continental Can Co.	I	Containerboard	(1550)
		Pineville	Pineville Kraft Corp.	I	Linerboard	800
		Springhill	International Paper Co.*	I	Containerboard	(1020)
			Red River Paper Mills Inc.	NI	Kraft board	265
		West Monroe	Olinkraft Inc.	I	Containerboard	(1400)
	Oklahoma	Valliant	Weyerhaeuser Co.	I	Linerboard	1200
					Corr. medium	400
	Texas	Galena Park	United States Gypsum Co.	NI	Chipboard	150
		Grand Prairie	Corrugated Services Inc.	NI	Corr. medium	n.a.
		Orange	Owens-Illinois Inc.	I	Linerboard	900

TABLE A-1-1 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONTAINERBOARD

Region	State	City	Company	NI/I	Product	Capacity
Mountain	Montana	Missoula	Hoerner Waldorf Corp.	I	Linerboard	1000
	Colorado	Denver	Packaging Corp. of America*	NI	Linerboard	(100)
	Arizona	Snowflake	Southwest Forest Industries*	I	Linerboard	450(700)
Pacific	Washington	Bellingham	Georgia-Pacific Corp.	NI	Coated Bond	(245)
		Longview	Longview Fibre Co.*	I	Containerboard	1050(1700)
			Weyerhaeuser Co.*	I	Corr. medium	270(720)
					Kraft paperboard	140(720)
		Port Townsend	Crown Zellerbach Corp.*	I	Containerboard	400
		Sumner	Fibreboard Corp.*	NI	Linerboard	(60)
		Tacoma	Container Corp. of America	NI	Linerboard	50
			St. Regis Paper Co.*	I	Linerboard	440(656)
		Wallula	Boise Cascade Corp.	I	Corr. medium	240
					Kraft linerboard	460
	Oregon	Albany	Western Kraft Corp.	I	Containerboard	800
		Gardiner	International Paper Co.*	I	Containerboard	(600)
		Lebanon	Crown Zellerbach Corp.	I	Corr. medium	100
		North Bend	Menasha Corp.	I	Corr. medium	285
		Springfield	Weyerhaeuser Co.	I	Linerboard	1150
		Toledo	Georgia-Pacific Corp.	I	Linerboard	(1035)

TABLE A-1-1 (Cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONTAINERBOARD

Region	State	City	Company	NI/I	Product	Capacity
	California	Antioch	Crown Zellerbach Corp.*	NI	Corr. medium	400(545)
			Fibreboard Corp.	I	Corr. medium	(810)
		Los Angeles	Container Corp. of America	NI	Linerboard	(300)
			Fibreboard Corp.	NI	Containerboard	(175)
		Newark	American Forest Products	NI	Corr. medium	125
		Port Hueneme	Western Kraft Corp.	NI	Corr. medium	100
Other	Puerto Rico	Aricebo	Pan American Paper Mill, Inc.	NI	Corr. medium	170

* Mills with combination outputs
( ) Indicates total capacity

TABLE A-1-2

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - GROUNDWOOD PAPER

Region	State	City	Company	NI/I	Product	Capacity
New England	Maine	Brunswick	Hearst Corp.	I	Newsprint	160
		Bucksport	St. Regis Paper Co.	I	Coated & uncoated publication paper	100(650)
		Chisholm	International Paper Co.	I	Groundwood papers	130
		East Millinocket	Great Northern Paper Co.	I	Newsprint & GW spec.	1080
		Madison	Kennebec River Pulp & Paper Co.	I	Groundwood paper	175
		Millinocket	Great Northern Paper Co.	I	Newsprint	1150
		Madawaska	Fraser Paper Ltd.*	I	Groundwood Paper	500(980)
		Woodland	Georgia-Pacific Corp.*	I	Newsprint	300(1000)
	Vermont	Bellows Falls	Mountain Paper Products Corp.	NI	Groundwood papers	22
Middle Atlantic	New York	Corinth	International Paper Co.	I	Groundwood paper	530
		Plattsburg	Imperial Wallpaper Mill	I	GW specialties	40
	New Jersey	Garfield	Garden State Paper Co.	I	Newsprint	450
East North Central	Illinois	Alsip	F.S.C. Paper Corp.	I	Newsprint	265
	Michigan	Manistique	Manistique Pulp & Paper Co.	I	Newsprint & GW special.	150
	Wisconsin	Combined Lakes	Appleton Papers Inc.	I	GW specialties	400
West North Central	Minnesota	International Falls	Boise Cascade Corp.	I	Groundwood paper	460
		Little Falls	Henepin Paper Co.	I	Groundwood paper	80

TABLE A-1-2 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - GROUNDWOOD PAPER

Region	State	City	Company	NI/I	Product	Capacity
	Minnesota (cont'd)	Sartell	St. Regis Paper Co.	I	Groundwood paper	230
South Atlantic	South Carolina	Catawba	Catawba Newsprint Co.	I	Newsprint	600
	Georgia	Augusta	Abitibi Southern Corp.	I	Newsprint	500
East South Central	Tennessee	Calhoun	Bowaters Southern Paper Corp.	I	Newsprint	1500
	Alabama	Coosa Pines	Kimberly-Clark Corp.	I	Newsprint	1200
West South Central	Arkansas	Pine Bluff	International Paper Co.	I	Newsprint	1600
	Louisiana	DeRidder	Boise Southern Co.*	I	Newsprint	425(1325)
	Texas	Houston	Southland Paper Mills	I	Newsprint	375
		Lufkin	Southland Paper Mills	I	Newsprint	1000
Mountain	Arizona	Snowflake	Southwest Forest Industries*	I	Newsprint	250(700)
Pacific	Washington	Millwood	Inland Empire Paper Co.*	I	Newsprint	85(130)
		Port Angeles	Crown Zellerbach Corp.	I	Newsprint	400
		Steilacoom	Boise Cascade Corp.	I	Newsprint	375
	Oregon	Clatskanie	Crown Zellerbach Corp.*	I	Newsprint	380(765)
		Newburg	Publishers Paper Co.	I	Newsprint	420(510)
		Oregon City	Publishers Paper Co.	I	Newsprint	590
	California	Pomona	Garden State Paper Co.	I	Newsprint	320

*Mills with combination outputs
( ) Indicates total capacity

TABLE A-1-3

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - TISSUE

Region	State	City	Company	NI/I	Product	Capacity
New England	Maine	Augusta	Statler Tissue Corp.	I	Tissue	150
		Lincoln	Lincoln Pulp & Paper Co.*	I	Tissue	48(193)
		Mechanic Falls	Marcal Paper Mills	NI	Tissue	55
		Old Town	Penobscot Co.	I	Tissue	100
		Winslow	Scott Paper Company	I	Tissue	500
	New Hampshire	Claremont	Coy Paper Co.	NI	Tissue	36
		Gorham	Brown Co.*	NI	Tissue	150(500)
		Groveton	Groveton Papers Co.*	I	Tissue	50(650)
		Hinsdale	Ashuelot Paper Co., Inc.	NI	Tissue	40
			Hinsdale Products Co., Inc.	NI	Tissue	20
			Paper Service Mills, Inc.	I	Tissue	25
			G.E. Robertson & Co.	NI	Tissue	7
	Vermont	Bellows Falls	Northern State Paper Corp.	NI	Tissue	20
		North Bennington	Vermont Tissue Paper Co.	NI	Tissue	10
		Putney	Putney Paper Co., Inc.	I	Tissue	34
		Wells River	Adams Paper Co. of Vermont, Inc.	NI	Tissue	12
	Massachusetts	Baldwinsville	Baldwinsville Products, Inc.	I	Tissue	100
		Erving	Erving Paper Mills	I	Tissue	100
		South Hadley	Marcal Paper Mills, Inc.	NI	Tissue	30

TABLE A-1-3 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - TISSUE

Region	State	City	Company	NI/I	Product	Capacity
	Massachusetts (cont'd)	Westfield	Stevens Paper Mills, Inc.	NI	Tissue	10
	Connecticut	East Hartford	Cellu Products Co.	NI	Tissue	60
		New Milford	Kimberly-Clark Corp.	NI	Tissue	150
Middle Atlantic	New York	Battenville	Bio-Tech Mills, Inc.	NI	Tissue	54
		Carthage	Crown-Zellerbach Corp.	I	Tissue	130
		Clayville	Doeskin, Inc.	NI	Tissue	70
		Fort Edward	Scott Paper Co.	NI	Tissue	165
		Gouverneur	Groveton Paper Co.	NI	Tissue	50
			Stevens & Thompson Paper Co.	NI	Tissue	60
			Mohawk Valley Paper Co.	NI	Tissue	25
		Mechanicville	Thomas A. Galante & Sons,Inc.	I	Tissue	80
		Plattsburgh	Georgia-Pacific Corp.	I	Tissue	170
		Rochester	Flower City Tissue Mills Co.	NI	Specialty Tissue	20
		South Glens Falls	Patrician Paper Co., Inc.	NI	Tissue	130
		Thomson	Hudson Pulp & Paper Corp.	NI	Tissue	80
	New Jersey	Bloomfield	Marcal Paper Mills, Inc.	NI	Tissue	20
		Elmwood Park	Marcal Paper Mills, Inc.	I	Tissue	80
		Milltown	Cel-Fibe	NI	Tissue	150

TABLE A-1-3 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - TISSUE

Region	State	City	Company	NI/I	Product	Capacity
	Pennsylvania	Buck Run	Pennsylvania Gen. Paper Co.	NI	Tissue	25
		Chambersburg	United States Paper Mills	NI	Tissue	35
		Chester	Scott Paper Co.	NI	Tissue	900
		Exton	Exton Paper Mfrs. Inc.	NI	Tissue	10
		Lititz	Garden State Paper Co., Inc.	I	Tissue	50
		Mehoopany	Charmin Paper Products Co.	NI	Tissue	n.a.
		Modena	Valley Paper Mills, Inc.	NI	Tissue specialties	n.a.
		Paxinos	Cellu Products Co.	NI	Tissue	15
		Philadelphia	Marcal Paper Mills, Inc.	NI	Tissue	25
		Ransom	Potlatch Corp.	NI	Tissue	100
East North Central	Ohio	Middletown	Crystal Tissue Co.	NI	Tissue	80
	Illinois	Wilmington	Diamond International Corp.	NI	Tissue	n.a.
	Michigan	Sheboygan	Charmin Paper Products, Inc.	NI	Tissue	100
	Wisconsin	Ashland	American Can Co.	I	Tissue	51
		Eau Claire	Brown Co.	I	Tissue	160
		Green Bay	American Can Co.	I	Tissue	400
			Charmin Paper Products, Inc.	NI	Tissue	n.a.
			Charmin Paper Products, Inc.	I	Tissue	n.a.
			Fort Howard Paper Co.	I	Tissue	800

TABLE A-1-3 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - TISSUE

Region	State	City	Company	NI/I	Product	Capacity
	Wisconsin (cont'd)	Ladysmith	Peavey Paper Mills, Inc.	I	Tissue	60
		Marinette	Scott Paper Co.	I	Tissue	175
		Menasha	Wisconsin Tissue Mills	I	Tissue	n.a.
		Neenah	Kimberly-Clark Corp.*	NI	Tissue	205(275)
		Tomahawk	Georgia-Pacific Corp.	NI	Tissue	20
West North Central	(No tissue mills)					
South Atlantic	Maryland	Freeland	Freeland Paper Mill	NI	Wadding tissue	10
	North Carolina	Patterson	Cellu Products Co.	NI	Tissue	35
		Rockingham	Carolina Paper Mills, Inc.	I	Tissue	40
			Goodwin Paper Mills, Inc.	I	Tissue	7
	South Carolina	Beech Island	Kimberly-Clark Corp.	NI	Tissue	300
	Georgia	Albany	Charmin Paper Products	NI	Tissue	n.a.
	Florida	Palatka	Hudson Pulp & Paper Co.*	I	Tissue	220(770)
East South Central	Tennessee	Memphis	Kimberly-Clark Corp.	NI	Tissue	315
	Alabama	Butler	American Can Co.*	I	Tissue	500(900)
		Mobile	Scott Paper Co.*	I	Tissue	665(1355)
West South Central	Arkansas	Crossett	Georgia-Pacific Corp.	I	Tissue	225

TABLE A-1-3 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - TISSUE

Region	State	City	Company	NI/I	Product	Capacity
Mountain	Idaho	Lewiston	Potlatch Corp.	NI	Tissue	50
	Arizona	Flagstaff	Ponderosa Paper Products Inc.	I	Tissue	80
Pacific	Washington	Bellingham	Georgia-Pacific Corp.*	NI	Tissue	200(245)
		Camas	Crown-Zellerbach Corp.*	I	Tissue	300(1050)
		Everett	Scott Paper Co.	I	Tissue	450
	Oregon	Clatskanie	Crown-Zellerbach Corp.*	I	Tissue	200(765)
		Halsey	American Can Co.	I	Tissue	200
		St. Helens	Concel, Inc.	NI	Tissue	110
		West Linn	Crown-Zellerbach Corp.*	NI	Towel	70(530)
	California	Antioch	Crown-Zellerbach Corp.*	NI	Tissue	145(545)
		Fullerton	Kimberly-Clark Corp.	NI	Tissue	165
		Los Angeles	Crown Zellerbach Corp.	NI	Tissue	30(80)
		Orange	Potlatch Corp.	NI	Tissue	50
		LaVerne	Northwest Mills, Inc.	NI	Wadding Tissue	10
		Oxnard	Charmin Paper Products	NI	Tissue	220
		Pomona	Sierra Tissue Co.	NI	Tissue	10
Other	Puerto Rico		Vanity Fair Paper Corp. of PR	NI	Tissue	25

* Mills with combination outputs
( ) Indicates total capacity

TABLE A-1-4

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - FOLDING BOXBOARD

Region	State	City	Company	NI/I	Product	Capacity
New England	Massachusetts	Boston	Perkit Folding Box Corp.	NI	Boxboard	40
		Holyoke	Sonoco Products Co.	NI	Foodboard	125
		Lawrence	Lawrence Paperboard Corp.	NI	Boxboard	155
		Natick	Natick Paperboard Corp.	NI	Boxboard	90
		West Dudley	West Dudley Paper Co.	NI	Boxboard	50
	Connecticut	Manchester	Colonial Fiber Co.	NI	Bending paperboard	75
		Montville	Federal Paperboard Co., Inc.	NI	Folding boxboard	55
			Robertson Paper Box Co.	NI	Folding boxboard	65
		New Haven	Federal Paperboard Co., Inc.	NI	Boxboard	150
			Simkins Industries, Inc.	NI	Folding boxboard	220
		Oneco	Case & Risley Press Paper	NI	Folding boxboard	10
		Sprague	Federal Paperboard Co., Inc.	NI	Coated boxboard	425
Middle Atlantic	New York	Beaver Falls	Latex Fiber Industries, Inc.	I	Combination board	65
		Carthage	Climax Mfg. Co.	NI	Boxboard	100
		Castleton-on-Hudson	Brown Co.	NI	Folding boxboard	100
		Fulton	Sealright Co., Inc.	NI	Food containerboard	80
		Piermont	Clevepak Corp.	NI	Boxboard	(160)
		Utica	Foster Paper Co., Inc.	NI	Comb. board	75

TABLE A-1-4 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - FOLDING BOXBOARD

Region	State	City	Company	NI/I	Product	Capacity
	New Jersey	Clifton	Whippany Paperboard Co.	NI	Boxboard	(350)
		Jersey City	John F. Boyle Co.	NI	Newsboard	100
		Newark	Newark Boxboard Co.	NI	Newsboard	110
		Paterson	Morris Paperboard Co., Inc.	NI	Folding boxboard	110
		Ridgefield	Lowe Paper Co.	NI	Folding boxboard	140
		Whippany	Whippany Paperboard Co.			
			Eden Mill	NI	Boxboard	(1000)
			Hanover Mill	NI	Folding boxboard	150
			Stony Brook Mill	NI	Folding boxboard	150
	Pennsylvania	Downington	Sonoco Products Co.	NI	Comb. board	350
		Lancaster	American Paper Products	NI	Newsboard	50
		Philadelphia	Container Corp. of America	NI	Boxboard	450
			Newman & Co., Inc.	NI	Boxboard	190
		Reading	Federal Paperboard Co.	NI	Folding boxboard	35
		York	Yorktowne Paper Mills Inc.	NI	Boxboard	95
East North Central	Ohio	Cincinnati	Container Corp. of America*	NI	Boxboard	(120)
		Franklin	Stone Container Corp.	NI	Folding boxboard	125
		Lockland	Diamond International Corp.	NI	Folding boxboard	250
		Miamisburg	Interstate Folding Box Co.	NI	Folding boxboard	250

TABLE A-1-4 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - FOLDING BOXBOARD

Region	State	City	Company	NI/I	Product	Capacity
	Ohio (cont'd)	Rittman	Packaging Corp. of America*	NI	Boxboard	(600)
		Steubenville	Federal Paperboard Co., Inc.*	NI	Boxboard	(171)
	Indiana	Wabash	Container Corp. of America	NI	Comb. boxboard	250
	Illinois	Chicago	Container Corp. of America*	NI	Boxboard	(140)
		Marseilles	Nabisco Inc.	NI	Boxboard	155
		Morris	Federal Paperboard Co.	NI	Newsboard	190
		Pekin	Quaker Oats Company	NI	Boxboard	80
		Rockton	Sonoco Products Co.	NI	Newsboard	50
	Michigan	Battle Creek	St. Regis Paper Co.	NI	Boxboard	450
		Kalamazoo	Brown Co.-Combination Paperboard Div.	NI	Folding boxboard	350
		Menominee	American Can Co.*	NI	Foodboard	(300)
		Monroe	Consolidated Packaging Co.*	NI	Folding boxboard	425(815)
		Otsego	Mead Corp.	NI	Coated boxboard	170
		Palmyra	Simplex Industries, Inc.*	NI	Boxboard	50(65)
		Rockford	Rockford Paper Mills Inc.	NI	Boxboard	110
		White Pigeon	Weyerhaeuser Co-Paperboard Div.	NI	Boxboard	200
	Wisconsin	Menasha	Menasha Corp.	NI	Boxboard	250
		Wisconsin Rapids	Consolidated Papers, Inc.*	I	Boxboard	90(505)

TABLE A-1-4 (Cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - FOLDING BOXBOARD

Region	State	City	Company	NI/I	Product	Capacity
West North Central	Iowa	Tama	Packaging Corp. of America	NI	Folding boxboard	100
South Atlantic	Maryland	Ilchester	Simkins Industries, Inc.	NI	Boxboard	170
		Whitehall	Federal Paperboard Co., Inc.	NI	Boxboard	40
	Virginia	Covington	Westvaco Corp.*	I	Bleached board	(1350)
		Franklin	Union Camp Corp.*	I	Bleached paperboard	300(1000)
		Hopewell	Continental Can Co.*	I	Folding boxboard	(1060)
		Richmond	Federal Paperboard Co., Inc.	NI	Folding boxboard	270
	North Carolina	Canton	Champion International	I	Bleached food container-board	1420
		Charlotte	Carolina Paperboard Corp.	NI	Boxboard	90
		Riegelwood	Federal Paperboard Co.	I	Bleached Boxboard	(830)
	South Carolina	Georgetown	International Paper Co.*	I	Bleached board	(1675)
		Taylors	Carotell Paperboard Co.	NI	Newsboard	125
	Georgia	Augusta	Continental Can Co.*	I	Bleached board	(725)
		Austell	Austell Box Board Corp.	NI	Boxboard	300
		Cedartown	Alton Boxboard Co.	NI	Boxboard	48
		St. Mary's	Gilman Paper Co.*	I	Bleached boxboard	420(1090)
	Florida	Cantonment	St. Regis Paper Co.*	I	Bleached foodboard	250 (910)
		Miami	Simpkins Industries, Inc.	NI	Boxboard	100

TABLE A-1-4 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - FOLDING BOXBOARD

Region	State	City	Company	NI/I	Product	Capacity
	Florida (cont'd)	Panama City	International Paper Co.*	I	Bleached Board	(700)
East South Central	Tennessee	Chattanooga	Tennessee Paper Mills	I	Boxboard	300
	Alabama	Birmingham	McGraw Edison Co.*	NI	Foodboard	n.a.
		Butler	American Can Co.*	I	Bleached foodboard	(900)
		Demopolis	Gulf States Paper Corp.	I	Bleached foodboard	450
		Mobile	Scott Paper Company*	I	Bleached paperboard	(690)
	Mississippi	Vicksburg	International Paper Co.*	I	Boxboard	(1050)
West South Central	Arkansas	Crossett	Georgia-Pacific Corp.	I	Foodboard	410
	Louisiana	Springhill	International Paper Co.*	I	Bleached board	(1020)
	Texas	Dallas	TXI Paper Products, Inc.	NI	Boxboard	270
		Evandale	Eastex, Inc.*	I	Bleached foodboard	(1250)
		Texarkana	International Paper Co.	I	Bleached boxboard	440(610)
Mountain	Idaho	Lewiston	Potlatch Corp.	I	Bleached boxboard	700
	Colorado	Denver	Packaging Corp. of America*	NI	Boxboard	(100)
Pacific	Washington	Longview	Weyerhaeuser Company	I	Bleached foodboard	430(720)
		Sumner	Fibreboard Corp.*	NI	Boxboard	(60)
	California	Berkeley	Packaging Corp. of America	NI	Boxboard	50
		Los Angeles	Container Corp. of America	NI	Boxboard	(300)
			Federal Paperboard Co., Inc.	NI	Boxboard	120

TABLE A-1-4 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - FOLDING BOXBOARD

Region	State	City	Company	NI/I	Product	Capacity
	California (cont'd)	Los Angeles	Fibreboard Corp.	NI	Boxboard	175
			Box & Board Mills, Inc.	NI	Boxboard	70
		Richmond	Sonoco Products, Inc.	NI	Boxboard	60
	Oregon	Gardiner	International Paper Co.*	I	Bleached board	(600)

* Mills with combination outputs
( ) Indicates total capacity

TABLE A-1-5

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - PRINTING, WRITING & RELATED

Region	State	City	Company	NI/I	Product	Capacity
New England	Maine	Brewer	Eastern Fine Paper, Inc.	I	Writing paper	150
		Jay	International Paper Co.	I	Writing paper	710
		Lincoln	Lincoln Pulp & Paper Co.*	I	Bond papers	145(193)
		Madawaska	Fraser Paper Ltd.	NI	Writing paper	480
		Rumford	Oxford Paper Co.	I	Book paper	800
		Westbrook	S. D. Warren Co.(Div. Scott)	I	Book & specialty paper	550
	New Hampshire	Bennington	Monadnock Paper Mills, Inc.*	NI	Book and specialty paper	(75)
		Gorham	Brown Co.*	NI	Writing paper	350(500)
		Groveton	Groveton Paper Co.*	I	Printing paper	300(650)
		Lincoln	Profile Paper Corp.	I	Sulphite bond	135
	Vermont	Gilman	Georgia-Pacific Corp.	NI	Kraft printing paper	165
	Massachusetts	Adams	L.L. Brown Paper Co.	I	Writing paper	10
			Rochester Paper Co.	I	Writing paper	50
		Boston	Diamond International Corp.	I	Writing paper	140
		Dalton	Crane & Co.			
			Bay State Mill	NI	Fine papers	14
			Government Mill	NI	Banknote paper	15
			Pioneer Mill	NI	Tracing paper	12
			Byron Weston Co.	NI	Envelope paper	40
		Fitchburg	Weyerhaeuser Company	NI	Book papers	315
		Holyoke	Brown Co.	NI	Printing paper	110
			NVF Co.	NI	Writing paper	25
			Valley Paper Co.	NI	Writing paper	15
		Housatonic	Rising Paper Co.	I	Writing paper	40
		Lee	Peter J. Schweitzer Div. (Div. Kimberly-Clark)	NI	Printing tissue	58

TABLE A-1-5 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - PRINTING, WRITING & RELATED

Region	State	City	Company	NI/I	Product	Capacity
	Massachusetts (cont'd)	Millers Falls	Millers Falls Paper Co.	NI	Writing paper	20
		Otter River	Seaman Paper Co. of Mass.Inc.	NI	Carbonizing tissue	40
		Turners Falls	Esleek Mfg. Co.	NI	Writing paper	10
			Strathmore Paper Co. Hammermill	NI	Writing paper	n.a.
		West Springfield	Southworth Co.	NI	Writing paper	15
			Strathmore Paper Co. "	NI	Writing paper	120
		Woronco	Strathmore Paper Co. "	NI	Writing paper	n.a.
Middle Atlantic	New York	Au Sable Falls	J & J Rogers Co.	NI	Printing paper	100
		Brownville	Brownville Paper Co.	NI	Bond paper	15
		Chatham	Columbia Corp.	NI	Printing paper	100
		Cohoes	Mohawk Paper Mills Inc.	NI	Printing paper	75
		Deferiet	St. Regis Paper Co.	I	Printing paper	450
		Glens Falls	Finch, Pruyn & Co., Inc.	I	Printing paper	350
			Finch, Pruyn & Co., Inc.	I	Text, vellum	350
		Little Falls	Burrows Paper Co.	NI	Carbonizing tissue	25
			Burrows Paper Co.	NI	Carbonizing tissue	40
		Lyons Falls	Georgia-Pacific Corp.	NI	Printing paper	190
		Newton Falls	Newton Falls Paper Mill	I	Printing paper	190
		North Tonawanda	International Paper Co.	I	Book papers	280
		Oswego	Hammermill Paper Co.	NI	Printing paper	100
		Phoenix	Burrows Tissue Co., Inc.	NI	Carbonizing tissue	25
		Ticonderoga	International Paper Co.	I	Printing paper	600
		Waterford	Mohawk Paper Mills, Inc.	NI	Writing papers	60
	New Jersey	Elizabeth	Peter Schweitzer Div. K-C	NI	Printing paper	33
		Spotswood	Peter Schweitzer Div. K-C	NI	Fine paper	80

TABLE A-1-5 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - PRINTING, WRITING & RELATED

Region	State	City	Company	NI/I	Product	Capacity
	Pennsylvania	Erie	Hammermill Paper Co.	NI	Printing paper	444
		Lock Haven	Hammermill Paper Co.	I	Coated printing paper	400
		Miquan	Weyerhaeuser Co.	NI	Printing paper	210
		Reading	Georgia-Pacific Corp.	NI	Printing paper	50
		Roaring Springs	Appleton Papers Inc.	I	Printing papers	190
		Spring Grove	P. H. Glatfelter Co.	I	Book papers	500
		Tyrone	Westvaco Corp.	NI	Communications paper	100
East North Central	Ohio	Chillicothe	Mead Corp.	I	Writing paper	490
				NI	Specialty paper	373
		Hamilton	Beckett Paper Co.	NI	Writing paper	140
			Champion International	I	Writing paper(coated)	510
		Middletown	Harding-Jones Paper Co.	I	Writing paper	20
			Sorg Paper Co.	NI	Printing paper	375
		Urbana	Howard Paper Mills Inc.	NI	Writing paper	60
		West Carrollton	Bergstrom Paper Co.	I	Envelope & writing paper	400
	Indiana	Hartford City	Minnesota Mining & Mfg. Co.	NI	Printing paper	50
	Illinois	Taylorville	Georgia-Pacific Corp.	NI	Printing papers	100
	Michigan	Alpena	Fletcher Paper Co.	NI	Writing papers	65
		Escanaba	Escanaba Paper (Sub.Mead Corp.)	I	Coated printing papers	600
		Kalamazoo	Allied Paper Co.*	NI	Printing papers	450(625)
			Brown Paper Co.	NI	Matte-finish book	100(625)
			Georgia Pacific Corp.	I	Writing paper	400
			Hawthorne Paper Co.	I	Printing paper	50
		Munsing	Kimberly-Clark Corp.	NI	Writing paper	78
		Muskegon	S.D. Warren Co. (Scott)	I	Text specialty paper	350

TABLE A-1-5 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - PRINTING, WRITING & RELATED

Region	State	City	Company	NI/I	Product	Capacity
	Michigan (cont'd)	Niles	French Paper Co.	NI	Text specialty paper	60
		Plainwell	Plainwell Paper Co., Inc.	NI	Book paper	200
		Port Huron	Dunn Paper Co.	NI	Printing papers	105
		Vicksburg	Simpson Lee Paper Co.	I	Printing paper	100
		Watervliet	Watervliet Paper Co.	NI	Writing paper	130
	Wisconsin	Appleton	Fox River Paper Co.	NI	Printing paper	50
			Riverside Paper Corp.	I	Writing paper	95
		Brokaw	Wausau Paper Mills Co.	I	Printing paper	270
		Kimberly	Kimberly-Clark Corp.	I	Coated GW book paper	464
		Menasha	Mead Corp.	I	Writing paper	61
			Geo. A. Whiting Paper Co.	NI	Special-finish paper	20
		Merrill	Ward Paper Co.	I	Writing paper	60
		Neenah	Bergstrom Paper Co.	I	Writing paper	300
		Nekoosa	Nekoosa Edwards Paper Co.	I	Writing and printing	380
		Niagara	Niagara of Wisc. Paper Corp.	I	Book paper	475
		Park Falls	Flambeau Paper Co.	I	Writing paper	300
		Peshtigo	Badger Paper Mills Inc.	I	Printing paper	150
		Port Edwards	Nekoosa Edwards Paper Co.	I	Printing & writing	370
		Rothschild	Weyerhaeuser Co.	I	Printing paper	330
		Shawano	Shawano Paper Mills Inc.	NI	Book paper	100
		Stevens Point	Consolidated Papers, Inc.	I	Enamel book	275
			Whiting-Plover Paper Co.	I	Writing paper	30
		Wisconsin Rapids	Consolidated Papers Inc.	NI	Enamel book	415
			Consolidated Papers, Inc.	NI	Enamel book	450

TABLE A-1-5 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - PRINTING, WRITING & RELATED

Region	State	City	Company	NI/I	Product	Capacity
West North Central	Minnesota	Brainerd	Northwest Paper Div. Potlach	I	Writing paper	225
		Cloquet	Northwest Paper Div. Potlach	I	Writing paper	330
		Grand Rapids	Blandin Paper Co.*	I	Coated GW printing paper	(550)
South Atlantic	Maryland	Luke	Westvaco Corp.	I	Coated & uncoated printing papers	900
	Virginia	Franklin	Union Camp Corp.	I	Printing paper	1000
		Richmond	Standard Paper Mfg. Co.	NI	Printing paper	110
	North Carolina	Pisgah Forest	Olin Corp.	I	Printing & writing	275
		Plymouth	Weyerhaeuser Co.	NI	Printing & Writing	275
	South Carolina	Catawba	Bowaters Carolina Corp.	I	Printing papers	240
East South Central	Kentucky	Wickliffe	Westvaco Corp.	NI	Writing paper	350
	Tennessee	Kingsport	Mead Corp.	I	Printing papers	443
	Alabama	Courtland	Champion International	I	Coated writing paper	260
		Jackson	Allied Paper, Inc.*	I	Writing paper	250(500)
		Mobile	Scott Paper Co.*	I	Writing paper	(690)
West South Central	Arkansas	Ashdown	Nekoosa Edwards Paper Co.	I	Writing paper	200
	Louisiana	Lockport	Valentine Pulp & Paper Co.	I	Writing paper	125
		St. Francisville	St. Francisville Paper Co.	I	Coated printing papers	500
	Texas	Pasadena	Champion International	I	Coated wood-free & GW	620
Mountain	(No mills of	this type)				
Pacific	Washington	Everett	Simpson Lee Paper Co.	I	Writing paper	140
		Hoquiam	Grays Harbor Paper Co. (Hammermill)	NI	Writing papers	286
		Longview	Weyerhaeuser Co.	I	Fine papers	120

TABLE A-1-5 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - PRINTING, WRITING & RELATED

Region	State	City	Company	NI/I	Product	Capacity
	Washington (cont'd)	Millwood	Inland Empire Paper Co.	NI	Printing paper	45
		Vancouver	Boise Cascade Corp.	I	Writing paper	270
	Oregon	Salem	Boise Cascade Corp.	I	Writing paper	250
	California	Anderson	Simpson Lee Paper Co.	I	Printing paper	155
		Pomona	Northwest Paper Div. Potlach	I	Writing paper	260
		Ripon	Simpson Lee Paper Co.	NI	Writing paper	90

* Mills with combination outputs

( ) Indicates total capacity

TABLE A-1-6

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - INDUSTRIAL PACKAGING & CONVERTING

Region	State	City	Company	NI/I	Product	Capacity
New England	Maine	Bar Mills	Colonial Fiber Co.	NI	Shoe board	21
		Belfast	Sherman & Co.	NI	Water shank board	3
		East Poland	Colonial Fiber Co.	NI	Shoe board	7
		Millinocket	Great Northern Paper Co.*	NI	Mill wrapper	35(1185)
	New Hampshire	Bennington	Monadnock Paper Mills Inc.*	NI	Kraft papers	(75)
		Berlin	Brown Co.	I	Kraft paper	50
		Claremont	Bemis Co., Inc.	NI	Special ind. kraft paper	50
		Hinsdale	Ashuelot Paper Co., Inc.	NI	Kraft paper	40
		Milton	Milton Leatherboard Co.	NI	Specialty papers	10
		North Rochester	Spaulding Fiber Co.	I	Shoe board	11
			Spaulding Fiber Co.	NI	Electrical products	22
		Penacook	Penacook Fiber Co.	NI	Shoe board	10
		Rochester	Colonial Fiber Co.	NI	Filters	12
		Tilton	Johns-Manville Products	NI	Electrical products	n.a.
		West Henniker	Contoocook Valley Paper Co.	NI	Latex-saturated papers	20
	Vermont	East Ryegate	Bemis Co., Inc.	NI	Kraft paper	60
		Sheldon Springs	Standard Packaging Corp.	I	Industrial papers	130

TABLE A-1-6 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - INDUSTRIAL PACKAGING & CONVERTING

Region	State	City	Company	NI/I	Product	Capacity
	Massachusetts	Bridgewater	George O. Jenkins Inc.	NI	Automotive paper	25
		Dalton	Crane & Co.-Old Berkshire Mill	NI	Carbon paper	2.5
		East Pepperell	Pepperell Paper Co.	NI	Kraft paper	115
			Hollingsworth & Vose Co.	NI	Special industrial paper	45
		Fitchburg	Crocker Technical Papers	NI	Electrical papers	24
			Fitchburg Paper Co.	I	Special industrial papers	(200)
			James River Fitchburg, Inc.	NI	Automotive papers	30
		Haverhill	Haverhill Paperboard Corp.*	NI	Specialty Board	(280)
		Lee	Westfield River Paper Co.	NI	High density paper	10
		Monroe Bridge	Deerfield Specialty Paper	NI	Glassine & ind. papers	40
		Russell	Westfield River Paper Co.	NI	High-density & glassine	37
		West Groton	Groton Leatherboard Co.	NI	Stereotype dry mats	n.a.
			Hollingsworth & Vose Co.	NI	Special ind. paper	50
		West Springfield	Premoid Corp.	NI	Industrial paper	30
	Connecticut	Manchester	Colonial Fiber Co.	NI	Shoeboard	40
		Windsor Locks	Dexter Corp.	NI	Filter paper	60
Middle Atlantic	New York	Ancram	Kimberley-Clark Corp.	NI	Condenser tissue	11
		Beaver Falls	Latex Fiber Ind., Inc.	NI	Automotive paper	15
		Fayetteville	McIntyre Bros. Paper Co.,Inc.	NI	Kraft paper	11

TABLE A-1-6 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - INDUSTRIAL PACKAGING & CONVERTING

Region	State	City	Company	NI/I	Product	Capacity
	New York (cont'd)	Green Island	Manning Paper Co.	I	Filter paper	43
		Greenwich	Hollingsworth & Vose Co. Blandy Papers Div.*	NI	Filter paper	15(55)
			Hollingsworth & Vose Co. Hovotex Div.	NI	Automotive papers	40
		Hoosick Falls	Wood Flong Corp.	NI	Stereotype matrix	15
		Marcellus Falls	Martisco Paper Mill Co.	NI	Grey bogus	15
		Pulaski	Schoeller Technical Paper	NI	Photographic paper	75
		Rochester	Eastman Kodak Co.	NI	Photographic paper	n.a.
		Tonawanda	Spaulding Fiber Co.	I	Impregnating paper	25
		Watertown	Knowlton Bros., Inc.	I	Photographic paper	20
	New Jersey	Camden	Latex Fiber Ind., Inc.	NI	Latex-impregnated fibrous sheeting	40
		Hughesville	Reigel Products Corp.	NI	Photographic paper	28
		Kearny	Western Electric Co.	NI	Special industrial	20
		Milford	Riegel Prod. Corp.	NI	Industrial products	185
		Mount Holly	McGraw Edison Co.	NI	Fiber pipe	n.a.
		Ridgefield Park	Lincoln Paper Co.	NI	Cylinder board	175
		Riegelsville	Riegel Products Co.	NI	Automotive papers	15
		West Trenton	Homasote Co.	NI	Industrial papers	350

TABLE A-1-6 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - INDUSTRIAL PACKAGING & CONVERTING

Region	State	City	Company	NI/I	Product	Capacity
	Pennsylvania	Ambler	Nicolet Industries, Inc.	NI	Millboard	9
		Bristol	Paterson Parchment Paper	NI	Greaseproof and parchment	90
		Downington	The Davey Co.	NI	Tube paper	45
			The Davey Co.	NI	Specialty fiber paper	60
			Shyrock Brothers	NI	Binderboard	25
		Mount Holly Springs	Kimberley-Clark Corp.	NI	Condenser tissue	15
			Eaton-Dikeman	NI	Industrial Filter	12
		Oakmont	U.S. Gypsum Co.	NI	Grocery sack paper	60
		West Conshohocken	Westfield River Paper Co.	NI	Glassine & spec.paper	51
East North Central	Ohio	Chagrin Falls	Chase Bag Co.	NI	Special indus. paper	80
		Columbus	St. Regis Paper Co.	NI	Waxed paper	35
		Dayton	Howard Paper Mills Inc.	NI	Sulphite paper	100
		Hamilton	Nicolet Industries, Inc.	NI	Gasket papers	70
		Lockland	Fox Paper Co.	NI	Kraft paper	110
		Middletown	Mead Corp.	NI	Absorbent papers	25
		Monroe Falls	Sonoco Products Co.	NI	Tube board	65
		Toronto	Toronto Paperboard Co.	NI	Tube board	95

TABLE A-1-6 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - INDUSTRIAL PACKAGING & CONVERTING

Region	State	City	Company	NI/I	Product	Capacity
	Indiana	Indianapolis	Beveridge Paper Co.	NI	Industrial paper	70
		Lafayette	Alton Box Board Co.	NI	Recycled ind. boards	100
		Vincennes	Vincennes Paper Mill Inc.	NI	Tube stock	80
	Illinois	Chicago	Western Electric Corp.	NI	Cable paper	30
		Peoria	Bemis Co., Inc.	NI	Kraft papers	50
	Michigan	Kalamazoo	Allied Paper Co.*	NI	Specialty paper	75(525)
			Brown Co. Specialty Papers Div.	NI	Glassine, printing & waxing ind. papers	(350)
			Minnesota Mining & Mfg.	NI	Industrial Paper	18
		Menominee	Bell Fibre Prod., Inc.*	NI	Wax paper	(300)
		Rochester	Rochester Paper Co.	NI	Industrial paper	70
	Wisconsin	Beloit	Beloit Box Board Co.	NI	Tube paper	40
		DePere	Nicolet Paper Co.	NI	Treated paper	130
		Kaukauna	Thilmany Pulp & Paper Co.	I	Converting paper	400
		Milwaukee	Keiding Inc.	NI	Industrial products	n.a.
			St. Regis Paper Co.	NI	Industrial paper	250
		Mosinee	Mosinee Paper Corp.	I	Kraft paper	240
		Neenah	Kimberly-Clark Corp.	NI	Industrial papers	58
			Kimberly-Clark Corp.	NI	Cushioning materials	70
		Rhinelander	St. Regis Paper Co.	I	Industrial papers	215

TABLE A-1-6 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - INDUSTRIAL PACKAGING & CONVERTING

Region	State	City	Company	NI/I	Product	Capacity
	Wisconsin (cont'd)	Waupoca	Filter Materials, Inc.	I	Industrial products	8
		West Bend	McGraw Edison Co.	NI	Fiber pipe	50
West North Central	Minnesota	Cloquet	Conwed Corp.	I	Household products	n.a.
	Missouri	Louisiana	Tallman Conduit Co.	NI	Pipes	n.a.
South Atlantic	Delaware	Newark	Curtis Paper Co.	NI	Sulphite papers	25
			NVF Co.	NI	Base for vulcanized fib.	10
		Yorklyn	NVF Co.*	NI	Vulcanized fiber	7.5(27.5)
	Maryland	Woodbine	Hyman Viener & Sons	NI	Lining paper	20
	Virginia	Buena Vista	Georgia Bonded Fibers, Inc.	NI	Industrial papers	36
		Franklin	Union Camp Corp.	I	Unbleached kraft paper	400(1000)
		Richmond	James River Paper Co.	NI	Specialty paper	25
		West Point	Chespeake Corp. of Virginia	I	Industrial paperboard	965
	West Virginia	Wellsburg	S. George Co.	I	Kraft shipping paper	10
	North Carolina	Alma	Paramount Paper Products	NI	Cellulose wadding	33
		New Bern	Weyerhaeuser Co.*	I	Kraft papers	(640)
		Roanoke Rapids	Hoerner-Waldorf Inc.	I	Kraft papers	500
	Georgia	Atlanta	Sonoco Products Co.	NI	Tubeboard	110
		Macon	Southern Glassine Co.	NI	Specialty paper	40
		Savannah	Union Camp*	I	Unbleached kraft paper	500(2800)

TABLE A-1-6 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - INDUSTRIAL PACKAGING & CONVERTING

Region	State	City	Company	NI/I	Product	Capacity
	Georgia (cont'd)	St. Mary's	Gilman Paper Co.*	I	Kraft paper	350(1090)
	Florida	Cantonment	St. Regis Paper Co.*	I	Kraft specialties	80(990)
		Palatka	Hudson Pulp & Paper Co.*	I	Kraft paper	550(770)
East South Central	Kentucky	Owensboro	W.R. Grace & Co.	NI	Industrial Paper	30
	Tennessee	Chattanooga	Container Corp. of America	NI	Tubeliner board	115
			Southern Specialty Paper Co.	NI	Industrial papers	20
		Memphis	Buckeye Cellulose Corp.*	I	Filter Paper	150(495)
		Newport	Sonoco Products Co.	NI	Cone and tube board	80
	Alabama	Mobile	International Paper Co.*	I	Kraft papers	625(1250)
		Tuscaloosa	Gulf States Paper Co.	NI	Kraft paper	500
	Mississippi	Pickens	Burrows Southern Corp.	NI	Condenser tissue	18
		Monticello	St. Regis Paper Co.*	I	Kraft paper	450(1600)
West South Central	Arkansas	Camden	International Paper Co.	I	Kraft paper	700
		Crossett	Georgia-Pacific Corp.*	I	Kraft paper	440
		Pine Bluff	Weyerhaeuser Co.	I	Kraft paper and board	200
	Louisiana	Bastrop	International Paper Co.	I	Kraft paper	975
		Bogalusa	Crown Zellerbach Corp.*	I	Waterproof board	400(1750)
		Elizabeth	Calkraft Paper Co.	I	Kraft paper	320
		St. Francisville	Crown Zellerbach Corp.*	I	Kraft paper	510

TABLE A-1-6 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - INDUSTRIAL PACKAGING & CONVERTING

Region	State	City	Company	NI/I	Product	Capacity
	Texas	Houston	Southland Paper Mills, Inc.*	I	Kraft paper	300(675)
		Orange	Equitable Bag Co., Inc.	NI	Kraft bags	85
		Sherman	McGraw Edison Co.	NI	Fiber pipe	35
Mountain	Arizona	Flagstaff	Ponderosa Paper Products*	I	Kraft paper	(80)
Pacific	Washington	Camas	Crown Zellerbach Corp.*	I	Kraft paper	(1050)
		Longview	Longview Fiber Co.*	I	Converting Papers	650(1700)
			R-W Paper Co.	NI	Industrial(glassine) paper	80
		Port Angeles	Fiberboard Corp.	I	Sulphite pulp boards	100
		Tacoma	St. Regis Paper Co.	I	Industrial paper	216
		Wenatchee	Keyes Fiber Co.	I	Packaging items	50
	Oregon	Corvallis	Evans Products Co.*	I	Plastic coated board	10 (110)
			McGraw Edison Co.	NI	Fiber pipe	n.a.
		Clatskanie	Crown Zellerbach Corp.*	I	Kraft bag	185(765)
		St. Helens	Boise Cascade Corp.	NI	Kraft papers	500
		West Linn	Crown Zellerbach Corp.*	I	Kraft specialties	(530)
	California	City of Industry	Sonoco Products Co.	NI	Tube board	60
		Newark	McGraw Edison Co.	NI	Pipe	n.a.
		Rocklin	Fiberboard Corp.	NI	Fiberboard	n.a.
		Sacramento	Keyes Fiber Co.	NI	Formed fiber	n.a.

* Mills with combination outputs

( ) Indicates total capacity

TABLE A-1-7

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONSTRUCTION PAPER AND PAPERBOARD

Region	State	City	Company	NI/I	Product	Capacity
New England	Maine	Lisbon Falls	International Paper Company	I	Insulation board	n.a.
	Vermont	Brattleboro	Boise Cascade Corp.	NI	Insulation board	60
		St. Johnsbury	EHV-Weidmann Industries, Inc.	NI	Fiberboard	15
	Massachusetts	East Walpole	Bird & Sons, Inc.*	NI	Building paper	180
		Russell	Texon, Inc.	NI	Fiber products	125
		South Hadley	Texon, Inc.	NI	Wet machine board	15
		South Lee	Mead Corp.	NI	Insulating papers	50
	Rhode Island	Phillipsdale	Bird & Son, Inc.	I	Felt	250
	Connecticut	Rogers	Rogers Corp.	NI	Fiberboard	45
		Stratford	Tilo Co., Inc.	NI	Roofing felt	35
		Manchester	Rogers Corp.	NI	Fiberboard	10
		Windsor	Stevens Paper Mills, Inc.	NI	Fiberboard	8
Middle Atlantic	New York	Deposit	Celotex Corp.	I	Coreboard	200
		Fulton	Armstrong Cork Co.	NI	Felt	n.a.
		Lockport	Upson Co.	NI	Wallboard	180
		Oakfield	U.S. Gypsum Co.	NI	Gypsum board	105
		Penn Yan	Penn Yan Paper Products Co.	NI	Felt	45
		Red Hook	Atlantic Asbestos Corp.	NI	Asbestos	12
		Rock City Falls	Cottrell Paper Co., Inc.	NI	Insulation board	6

TABLE A-1-7 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONSTRUCTION PAPER AND PAPERBOARD

Region	State	City	Company	NI/I	Product	Capacity
	New York (cont'd)	Saugerties	Empire State Paper Mill	I	Insulating paper	15
	New Jersey	Clarke	U.S. Gypsum Company	NI	Gypsum board liner	240
		Delair	Georgia-Pacific Corp.	NI	Gypsum board liner	200
		Garwood	National Gypsum Co.	NI	Gypsum board liner	115
		Gloucester City	GAF Corp.	I	Felts	300
		Jersey City	The Davey Co.	NI	Fiberboard	100
			U.S. Gypsum Company	NI	Felt	72
		Linden	Celotex Corp.	NI	Asbestos products	50
		Manville	Johns-Manville Products	I	Asbestos felts	150
		Millington	National Gypsum Co.	NI	Asbestos	140
		Perth Amboy	Celotex Corp.	I	Felt	100
		Riverside	Conwed Corp.	NI	Padding	n.a.
	Pennsylvania	Ambler	Nicolet Industries, Inc.	NI	Asbestos	40
		Emmaus	Lloyd A. Fry Roofing Co.	NI	Felt	115
		Erie	GAF Corp.	NI	Asbestos	80
		Milton	National Gypsum Co.	I	Gypsum board liner	290
		Norristown	Nicolet Industries, Inc.	NI	Asbestos felt	100
		Philadelphia	Celotex Corp.	I	Felt	140
		Sunbury	Celotex Corp.	I	Insulation wallboard	150
		Towanda	Masonite Corp.	I	Hardboard	500

TABLE A-1-7 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONSTRUCTION PAPER AND PAPERBOARD

Region	State	City	Company	NI/I	Product	Capacity
	Pennsylvania (cont'd)	Whitehall	GAF Corp.	I	Felt	105
		York	Certain-Teed Products Co.	I	Felt	90
East North Central	Ohio	Avery	Certain-Teed Products Co.	I	Felt	80
		Cincinnati	Celotex Corp.	I	Felt	200
		Franklin	Logan-Long Co.	I	Felt	100
					Asphalt roofing & siding	250
		Gypsum	U.S. Gypsum Company	I	Plaster board	105
		Sandusky	Cellulo Co., Inc.	NI	Filter, asbestos	n.a.
	Indiana	Brookville	Lloyd A. Fry Roofing Co.	NI	Felt	50
		Mishawaka	Lloyd A. Fry Roofing Co.	NI	Felt	90
	Illinois	Aurora	The Davey Co.	I	Fiberboard	100
		Chicago	Bird & Sons, Inc.	I	Felt	105
			Lloyd A. Fry Roofing Co.	NI	Felt	120
		East St. Louis	Certain-Teed Products Co.	I	Felt	100
		Joliet	GAF Corp.	I	Felt	230
			Johns-Manville Perlite Corp.	NI	Insulation board	50
		Mount Carmel	The Flintkote Co.	I	Felt	500
			Celotex Corp.	I	Felt	215
		Quincy	Celotex Corp.	NI	Gypsum board liner	300

TABLE A-1-7 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONSTRUCTION PAPER AND PAPERBOARD

Region	State	City	Company	NI/I	Product	Capacity
	Illinois (cont'd)	Waukegan	Johns-Manville Products Co.	NI	Felts	160
		Wilmington	Celotex Corp.	I	Felts	60
	Michigan	Alpena	Abitibi Corp.	I	Hardboard	450
		Kalamazoo	National Gypsum Co.	NI	Gypsum board liner	155
		L'anse	Celotex Corp.	I	Insulation board	270
		Palmyra	Simplex Industries, Inc.	NI	Binderboard	15
	Wisconsin	Cornell	The Flintkote Co.	I	Felt	200
		Phillips	Evans Products Co.	I	Hardboard	n.a.
		Superior	Superior Fiber Products	I	Hardboard	140
West North Central	Minnesota	Bemidji	Superwood Corp.	I	Hardboard	325
		Duluth	Superwood Corp.	I	Hardboard	240
		Minneapolis	Certain-Teed Products	NI	Felt	120
		Shakopee	Certain-Teed Products	NI	Felt	150
	Iowa	Dubuque	Celotex Corp.	I	Insulation ceiling tile	90
	Missouri	Boonville	Huebert Fiberboard Inc.	I	Insulation board	75
		Joplin	Tamko Asphalt Products	NI	Felt	130
		Kansas City	GAF Corp.	I	Felt	100
		North Kansas City	Lloyd A. Fry Roofing Co.	NI	Felt	50
			U.S. Gypsum Company	NI	Gypsum board liner	105

TABLE A-1-7 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONSTRUCTION PAPER AND PAPERBOARD

Region	State	City	Company	NI/I	Product	Capacity
	Missouri (cont'd)	St. Louis	National Gypsum Company	NI	Asbestos	100
	Kansas	Phillipsburg	Royal Brand Roofing Co.	NI	Felt	70
South Atlantic	Maryland	Finksburg	Congoleum Industries, Inc.	I	Felt	200
	Virginia	Danville	U.S. Gypsum Co.	I	Insulation board	n.a.
		Doswell	Evans Products Co.	I	Hardboard	n.a.
		Jarrett	Southern Johns-Manville Prod.	I	Insulation board	225
	North Carolina	Conway	Georgia-Pacific Corp.	I	Hardboard	n.a.
		Goldsboro	Celotex Corp.	NI	Felt	100
		Moncure	Evans Products, Inc.	I	Hardboard	n.a.
		Morehead	Lloyd A. Fry Roofing Co.	NI	Felt	50
		Roaring River	Abitibi Corp.	I	Hardboard	100
	South Carolina	Catawba	Champion International	I	Hardboard	550
	Georgia	Macon	Armstrong Cork Co.	NI	Ceiling products	n.a.
		Savannah	Certain-Teed Products.	I	Felt	70
			GAF Corp.	I	Felt	125
	Florida	Blountstown	Abitibi Corp.	I	Hardboard	100
		Jacksonville	Lloyd A. Fry Roofing Co.	NI	Felt	60
			United States Gypsum Co.	NI	Gypsum board liner	190
		Miami	Lloyd A. Fry Roofing Co.	NI	Roofing felt	60
		Pensacola	Armstrong Cork Co.	NI	Acoustical ceiling	n.a.

TABLE A-1-7 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONSTRUCTION PAPER AND PAPERBOARD

Region	State	City	Company	NI/I	Product	Capacity
East South Central	Tennessee	Covington	Colonial Fiber Co.	NI	Fiberboard	60
			Celotex Corp.	I	Felt	50
			Lloyd A. Fry Roofing Co.	NI	Felt	50
		Paris	Celotex Corp.	I	Hardboard	300
	Alabama	Mobile	GAF Corp.	I	Roofing felt	120
			National Gypsum Co.	I	Insulation board	350
	Mississippi	Greenville	U.S. Gypsum Company	I	Hardboard	380
		Laurel	Masonite Corp.	I	Hardboard	1000
		Meriden	The Flintkote Co.	I	Insulation board	225
			Masonite Corp.	NI	Felt	70
		Natchez	Johns-Manville Products	NI	Insulation board	n.a.
West South Central	Arkansas	Bearden	Bear Brand Roofing Inc.	NI	Roofing felt	22
		Camden	Celotex Corp.	NI	Roofing felt	35
	Louisiana	Marrero	Celotex Corp.	NI	Insulation board	600
		New Orleans	National Gypsum Co.	NI	Wallboard liner	425
			Southern Johns-Manville Prod.	I	Felt	125
		Shreveport	Bird & Sons, Inc.	I	Felt	160
		Slidell	Slidell Felt Mills Inc.	NI	Felt	27

TABLE A-1-7 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONSTRUCTION PAPER AND PAPERBOARD

Region	State	City	Company	NI/I	Product	Capacity
	Oklahoma	Ardmore	Big Chief Roofing Co.	NI	Felt	50
		Broken Bow	Weyerhaeuser Co.	I	Insulation wallboard	590
		Pryor	Georgia-Pacific Corp.	I	Gypsum board liner	150
				I	Felt	90
			National Gypsum Co.	NI	Gypsum board liner	200
		Stroud	Allied Materials Corp.	NI	Felt	81
	Texas	Dallas	GAF Corp.	I	Felt	66
		Diboll	Time-Temple Industries, Inc.	I	Insulation board	300
		Fort Worth	Southern Johns-Manville Prod.	NI	Felt	50
		Galena Park	U.S. Gypsum Co.*	NI	Wallboard liner	(150)
		Houston	Celotex Corp.	I	Felt	50
			Lloyd A. Fry Roofing Co.	NI	Felt	60
		Irving	Lloyd A. Fry Roofing Co.	NI	Felt	80
		San Antonio	Celotex Corp.	NI	Felt	40
Mountain	New Mexico	Albuquerque	Allied Materials Corp.	NI	Felt	26
Pacific	Washington	Anacortes	Publishers' Forest Prod. Co. of Washington	I	Hardboard	n.a.
		Shelton	Simpson Timber Co.	I	Tile	120
	Oregon	Coos Bay	Georgia-Pacific Corp.	I	Hardboard	n.a.
		Corvallis	Evans Products Co.*	I	Hardboard	100(110)

TABLE A-1-7 (cont'd)

IDENTIFICATION OF PULP AND PAPER MILLS BY FUNCTIONAL GROUP - CONSTRUCTION PAPER AND PAPERBOARD

Region	State	City	Company	NI/I	Product	Capacity
	Oregon (cont'd)	Dee	Champion International	I	Hardboard	100
		Forest Grove	Forest Fiber Products Co.	I	Hardboard	100
		Hood River	Fibertech Corp.	NI	Hardboard	50
		Klamath Falls	Weyerhaeuser Co.	I	Hardboard	140
		Lebanon	Champion International	NI	Hardboard	150
		Pilot Rock	U.S. Gypsum Co.	I	Hardboard	130
		Portland	Bird & Sons Inc. of Mass.	NI	Felt	21
			Lloyd A. Fry Roofing Co.	NI	Felt	60
			Herbert Malarkey Roofing	NI	Felt	34
	California	Compton	Lloyd A. Fry Roofing Co.	NI	Roofing felt	70
		Fontana	Fontana Paper Mills, Inc.	NI	Dry felt	35
		Fresno	Cellulo Corp.	NI	Asbestos	n.a.
		Los Angeles	Celotex Corp.	NI	Felt	55
		Pittsburgh	Johns-Manville Products	I	Roofing felt	110
		Richmond	Certain-Teed Products	I	Roofing felt	56
		San Leandro	Kaiser Gypsum Co., Inc.	NI	Gypsum board liner	120

* Mills with combination outputs
( ) Indicates total capacity

APPENDIX A-2

PULP AND PAPER MILLS IN THE UNITED STATES, BY REGION

Region/State	Table
New England	
Maine	A-2-1
New Hampshire	-2
Vermont	-3
Massachusetts	-4
Rhode Island	-5
Connecticut	-6
Middle Atlantic	
New York	-7
New Jersey	-8
Pennsylvania	-9
East North Central	
Ohio	-10
Indiana	-11
Illinois	-12
Michigan	-13
Wisconsin	-14

Region/State	Table
West North Central	
Minnesota	A-2-15
Iowa	-16
Missouri	-17
Kansas	-18
South Atlantic	
Delaware	-19
Maryland	-20
Virginia	-21
West Virginia	-22
North Carolina	-23
South Carolina	-24
Georgia	-25
Florida	-26
East South central	
Kentucky	-27
Tennessee	-28
Alabama	-29
Mississippi	-30

Region/State	Table
West South Central	
Arkansas	A-2-31
Louisiana	-32
Oklahoma	-33
Texas	-34
Mountain	
Montana	-35
Idaho	-36
Colorado	-37
New Mexico	-38
Arizona	-39
Pacific	
Washington	-40
Oregon	-41
California	-42
Other	
Alaska	-43
Puerto Rico	-44

EXPLANATORY NOTES

Major Categories:

1 - Containerboard
2 - Groundwood
3 - Tissue and other machine creped paper
4 - Folding boxboard
5 - Printing, writing, and related
6 - Industrial packaging, converting, and misc.
7 - Construction paper and paperboard

Paper Machine Type:

C - Cylinder
MF - Multiformer (e.g., Rotoformer)
F - Fourdrinier
W - Wet former
D - Dry felting

Pulp Mill Type:

GW - Groundwood
DI - Deinked pulp
SF - Defibrated wood pulp
NSSC - Neutral sulfite semi-chemical
SO_3 - Sulfite
S - Soda
K - Kraft
UBK - Unbleached kraft
BK - Bleached kraft
CL - Cotton linters
XW - Exploded wood

"Mill Capacity" is average daily production in short tons.

Trim Size - If two or more machines have trim sizes very nearly the same, an average size is listed. If trim size is not available, wire width is given, followed by "W".

S/F - Indicates that mill utilizes secondary fiber

Sources: Lockwood's Directory of the Paper and Allied Trades, 1974; Paper Trade Journal; Pulp & Paper Magazine; National Association of Secondary Material Industries, Inc.

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TABLE A-2-1

State: Maine

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
					1	F	146			Sulphite mill is idle
Augusta	Statler Tissue Corp.	3	Tissue	150	1	F	150	SO_3	n.a.	S/F
					1	F	168	GW	20	
								DI	75	
Bar Mills	Colonial Fiber Co.	6	Insulating board	21	6	W	50			
Belfast	Sherman & Co.	6	Water shank board	3	1	W	42			
Brewer	Eastern Fine Paper Inc.	5	Writing paper	150	1	F	88	SO_3	200	
					2	F	105			
Brunswick	Hearst Corp.	2	Newsprint, Groundwood specialties	160	1	F	87	GW	200	
					1	F	117			
					1	F	137			
Bucksport	St. Regis Paper Co.	2	Publication paper	650	1	F	210	GW	328	S/F
					2	F	212			
Chisholm	International Paper Co.	2	Groundwood papers	130	2	F	141			
East Millinocket	Great Northern Paper Co.	2	Newsprint, Groundwood specialties	1,080	4	F	150	GW	920	
					1	F	260			
					1	F	272			
East Poland	Colonial Fiber Co.	6	Insulating board	7	2	W	47			mill is idle
Gardiner	Yorktowne Paper Mills of Maine, Inc.	1	Kraft board	80	1	C	81			
Jay	International Paper Co.	5	Writing paper	710	1	F	286	UBK	100	
					2	F	210	BK	500	
								GW	175	
Lincoln	Lincoln Pulp & Paper Co.	5	Bond papers	145	1	F	104	BK	340	200 tpd market pulp
		3	Tissue	48	1	F	100			
					1	F	94			

TABLE A-2-1 (Cont'd.)

State: Maine (con't)

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Lisbon Falls	U.S. Gypsum Co.	7	Insulation board	n.a.	Forming machines			GW	100	
Madawaska	Fraser Paper Ltd.	5	Printing paper	480	2	F	155			
					1	F	175			
		2	Publication paper	500	1	F	185			
					2	F	210			
					1	F	218			
					1	F	282			
					1	F	124			
Madison	Kennebec River Pulp & Paper Co., Inc.	2	Groundwood paper	175	1	F	134	GW	170	
Mechanic Falls	Marcal Paper Mills	3	Tissue	55	1	F	82			
					1	F	120			
					1	F	144			
Millinocket	Great Northern Paper Co.	2	Newsprint	1,150	1	C	76	SO_3	500	
		6	Mill wrapper	35	6	F	138	GW	700	
					4	F	148			
Old Town	Old Town Pulp Products, Inc.	6	Molded pulp	n.a.	pulp molders			GW	50	
	Penobscot Co.	3	Tissue	100	1	F	168	BK	350	} Up to 550 tpd market pulp
								SO_3	200	}
Rumford	Oxford Paper Co.	5	Printing paper	800	1	F	104	BK	550	30 tpd market pulp
					1	F	112	GW	120	S/F
					1	F	123			
					1	F	127			
					1	F	134			
					2	F	140			
					3	F	148			
					1	F	165			
Shawmut	Keyes Fibre	–	–	–	–	–	–	GW	100	Shipped to Waterville mill

TABLE A-2-1 (Cont'd.)

State: Maine (con't)

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Waterville	Keyes Fibre Co.	6	Egg cartons, packing	n.a.	pulp molders					S/F
Westbrook	S.D. Warren Co.	5	Book papers	550	2	F	57	BK	270	
					1	F	69			
					1	F	78			
					1	F	82			
					1	F	88			
					1	F	91			
					1	F	105			
					2	F	126			
					1	F	135			
Winslow	Scott Paper Co.	3	Tissue	550	3	F	120	SO_3	480	
					1	F	128			
					2	F	144			
Woodland	Georgia-Pacific Corp.	2	Newsprint	300	1	F	152	K	800	600 tpd market pulp
		5	Printing paper	100	1	F	192	GW	240	

TABLE A-2-2

State: New Hampshire

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Ashuelot	Paper Service Mills Inc.	3	Tissue	12	1	C	82			Mill is idle
					1	F	100			
Bennington	Monadnock Paper Mills Inc.	5,6	Specialty book & kraft paper	75	1	F	88			
Berlin	Brown Co.	6	Kraft paper	50	1	F	44W	UBK	100	
		1	Corrugating medium	240	2	F	90	BK	600	100 tpd market pulp
					1	F	160	NSSC	250	
Claremont	Bemis Co. Inc.	6	Specialty kraft paper	50	1	F	54			S/F
					1	F	90			
					1	F	124			
	Coy Paper Co.	3	Tissue	36	2	C	56			
					1	C	62			
Gorham	Brown Co.	5,6	Printing wrapping printing	350	4	F	146			
		3	Tissue	150	1	F	180			
					1	F	94			
Groveton	Groveton Papers Co.	5	Printing paper	300	2	F	100	SO_3	130	
					1	F	105			
		1	Corrugating medium	300	1	F	145	NSSC	300	
					1	F	148			
		3	Tissue	50	1	F	160			
Hinsdale	Ashuelot Paper Co. Inc.	6	Kraft papers	40	1	F	86			
					1	F	89			
	Hindsdale Products Co., Inc.	3	Tissue	20	1	F	96			
	Paper Service Mills Inc.	3	Tissue	25	2	C	81	DI	30	
					1	C	64			
	G.E. Roberston & Co.	3	Tissue	7	1	C	85			
Lincoln	Profile Paper Corp.	5	Printing paper	135	3	F	120	SO_3	100	Paper mill is idle S/F

TABLE A-2-2 (Cont'd.)

State: New Hampshire (con't)

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
Milton	Milton Leather Board Co.	6	Specialty boards	10	5	W	39			
	Spaulding Fibre Co., Inc.	6	Fiberboard & rag papers	17	4	W	50	Rags	5	
					3	W	50			
Nashua	Brown Products, Inc.	1	Corrugating medium	6	2	C	37			
North Rochester	Spaulding Fibre Co.	6	Fiberboard	22	1	W	92			
					1	W	138			
Penacook	Penacook Fibre Co.	6	Specialty boards	10	3	W	56			
Rochester	Colonial Fiber Co.	6	Specialty papers	12	1	MF	72			
Tilton	Johns-Manville Products Corp	6	Electrical products	n.a.	1	C	38			
					1	C	38			
West Henniker	Contoocook Valley Paper Co.	6	Latex – saturated papers	20	1	F	58			
West Hopkinton	USM Corp.	7	Chipboard	75	1	C	60			

TABLE A-2-3

State: Vermont

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Bellows Falls	Mountain Paper Products Corp.	2	Groundwood papers	22	1	F	84			
	Northern States Paper Corp.	3	Tissue	20	1	F	93			
Brattleboro	Boise Cascade Corp.	6	Specialty paperboard	60	1	C	84			S/F
East Ryegate	Bemis Co. Inc.	6	Kraft paper	60	1	F	133			S/F
Gilman	Georgia-Pacific Corp.	5	Kraft printing papers	165	1	F	152			
North Bennington	Vermont Tissue Paper Co.	3	Tissue	10	1	C	65			
Putney	Putney Paper Co. Inc.	3	Tissue	34	2	C	82	DI	20	
Sheldon Springs	Standard Packaging Corp.	6	Paparboard	130	2	C	88	GW	50	
St. Johnsbury	EHV-Weidmann Industries Inc.	6	Fibreboard	15	1	C	144			
Wells River	Adams Paper Co. of Vermont, Inc.	3	Tissue	12	1	F	74			

TABLE A-2-4

State: Massachusetts

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Adams	L.L. Brown Paper Co.	5	Writing papers	10	2	F	56	Rags	n.a.	Pulp mill is idle; S/F
	Rochester Paper Co.	5	Writing papers	50	1	F	69	Rags	10	S/F
					1	F	78			
Baldwinsville	Baldwinsville Products, Inc.	3	Tissue	100	1	F	155	DI	100	
Becket	Becket Corp.	–	n.a.	n.a.	2	C	84	Recycle	200	Paper mill is idle
Boston	Diamond International Corp.	5	Printing papers	140	1	F	93	DI	100	S/F
					1	F	108			
	Perkit Folding Box Corp.	4	Boxboard	40	1	C	69			
Bridgewater	George O. Jenkins Co.	6	Fiberboard	25	7	W	55W			
Dalton	Crane & Co., Inc.									
	Baystate Mill	5	Fine papers	14	1	F	97			S/F
	Government Mill	5	Bank note paper	15	1	F	64			
	Old Berkshire Mill	6	Industrial carbon paper	2½	1	F	81			
	Pioneer Mill	5	Tracing paper	12	1	F	44			
					1	F	56			
					1	F	80			
					1	W	100			
					1	F	92			
	Bryon Weston Co.	5	Bond, parchment	40	1	F	96			S/F
East Pepperell	Pepperell Paper Co.	6	Kraft paper	115	1	F	88			
					1	F	114			
					1	F	143			
East Walpole	Bird & Son Inc.	7	Bldg. papers	180	1	C	82			S/F
					1	C	114			
					1	F	80			
	Hollingsworth & Vose Co.	6	Spec. indust. paper	45	1	C	108			
					1	F	82			

TABLE A-2-4 (Cont'd.)

State: Massachusetts (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Erving	Erving Paper Mills	3	Tissue	100	1	C	70	DI	25	
					1	F	101			
					1	MF	104			
					1	MF	86			
Fitchburg	Crocker Technical Papers Inc.	6	Electrical papers	24	2	F	138			
					1	C	84			
					1	F	84			
					1	F	92			
	Fitchburg Paper Co.	5	Printing papers	200	3	F	84	DI	n.a.	S/F
					1	F	105			
					1	F	148			
	James River-Fitchburg Inc.	6	Kraft specialty papers	30	1	C	96			
					1	C/F	95			
					1	F	64			
	Weyerhaeuser Co.	5	Printing & specialty papers	315	1	F	123			
					1	F	143			
					1	F	153			
					2	F	187			
Haverhill	Haverhill Paperboard Corp.	5,6	Kraft specialty boards	280	1	C	118			
					1	C	100			
Holyoke	Brown Co.	5	Printing paper	110	1	F	66			
					1	F	85			
					1	F	92			
					1	F	112			
					1	F	114			
	NVF Co.	5	Specialty writing paper	25	1	F	85			S/F
					1	F	72			

TABLE A-2-4 (Cont'd.)

State: Massachusetts (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	Sonoco Products Co.	4	Specialty board	125	1	C	52			
					1	C	62			
					1	C	118			
	Valley Paper Co.	5	Writing paper	15	2	F	60			
					1	F	72			
Housatonic	Rising Paper Co.	5	Writing paper	40	1	F	78	Rags	12	S/F
					1	F	80			
Lawrence	Lawrence Paperboard Corp.	4	Boxboard	155	1	C	125			
	Merrimac Paper Co. Inc.	6	Kraft board	70	1	F	80			
					1	F	100			
	Pleasant Valley Paper Mills Inc.	1	Chip-liner board	150	1	F	155	DI	200	
Lee	Peter J. Schweitzer Div.	3	Printing tissue	58	3	F	85W	n.a.	n.a.	
					1	F	93W			
					2	F	95W			
					1	F	100W			
					1	F	122W			
					1	F	130W			
					1	F	183W			
	Westfield River Paper Co., Inc.	6	Glassine	10	1	F	51			
Millers Falls	Millers Falls Paper Co.	5	Writing papers	20	2	F	80			
Monroe Bridge	Deerfield Specialty Papers Inc.	6	Glassine	40	1	F	78			S/F
					1	F	118			
Natick	Natick Paperboard Corp.	4	Boxboard	90	1	C	82			
Otter River	Seaman Paper Co. of Massachusetts, Inc.	3	Carbonizing tissue	40	1	F	80			
Palmer	Diamond International Corp.	6	Molded pulp	n.a.	1	F	120			S/F
					pulp molders					

TABLE A-2-4 (Cont'd.)

State: Massachusetts (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Russell	Texon Inc.	6	Specialty board	110	1	F	76			
					1	F	104			
	Westfield River Paper Co., Inc.	6	Glassine	37	1	F	74			
					1	F	90			
South Hadley	Marcal Paper Mills Inc.	3	Tissue	30	1	F	91			
					1	F	68			
	Texon Inc.	7	Fibreboard	15	3	F	84W			
					1	F	64W			
South Lee	Mead Corp.	6	Specialty papers	50	1	F	80			
					1	C/F	64			
					1	F	105			
Turners Falls	Esleeck Mfg. Co.	5	Writing papers	10	1	F	108			S/F
	Strathmore Paper Co.	5	Writing paper	n.a.		n.a.				
West Dudley	West Dudley Paper Co.	4	Boxboard	50	1	C	93			
Westfield	Stevens Paper Mills Inc.	3	Tissue	10	4	F	86			
West Groton	Groton Leatherboard Co.	6	Streotype dry mats	n.a.	4	W	n.a.			
	Hollingsworth & Vose Co.	6	Specialty indust. papers	35	1	C	75			
					1	F	60			
					1	MF	58			
West Springfield	Premoid Corp.	6	Specialty industrial papers	30	1	F	60			
	Southworth Co.	5	Writing papers	15	1	F	70			S/F

TABLE A-2-4 (Cont'd.)

State: Massachusetts (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	Strathmore Paper Co.	5	Writing papers	120	1	C	52	Rags		S/F
					1	C	89			
					1	F	56			
					1	F	67			
					1	F	70			
					1	F	74			
					1	F	75			
					1	F	79			
Wheelwright	Romar Tissue Mills Div.	3	Tissue	85	1	F	96			Mill is idle
					1	F	80			S/F
					1	F	108			
					1	F	96			

TABLE A-2-5

State: Rhode Island

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Phillipsdale	Bird & Son, Inc.	7	Felt	250	1	C	156	SF		S/F
		7	Insulation board	n.a.	1	F	111			
					1	W	100			

TABLE A-2-6

State: Connecticut

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
East Hartford	The Burnside Co. Inc.	1	Kraft board	20	1	F	64			
					1	W	48			
	Cellu Products Co.	3	Tissue	60	2	F	127			
Manchester	Colonial Fiber Co.									
	Manchester Plant	6	Fibreboard	40	1	W	100			
	Lydall & Foulds Div.	4	Combination boards	75	1	C	63			
	Rogers Corp.	6	Fibreboard	10	1	W	48			
Montville	Federal Paper Board Co. Inc.	4	Folding boxboard	55	1	C	70			Paper mill is idle
	Robertson Paper Box Co.	4	Folding boxboard	65	1	C	65			
New Haven	Federal Paper Board Co. Inc.	4	Boxboard	150	1	C	131			S/F
	Simkins Industries Inc.	4	Folding boxboard	220	1	C	92			S/F
					1	C	114			
New Milford	Kimberly-Clark Corp.	3	Tissue	150	2	F	168			S/F
Oneco	Case & Risley Press Paper Inc.	4	Folding box, specialty boards	10	1	W	48			
Rogers	Rogers Corp.	6	Fibreboard	35	2	C	60			
					1	C	112			
					1	C	48			Paper mill is idle
Seymour	Seymour Paper Mills Inc.	3	Tissue	10	2	C	67			
					1	C	102			
Sprague	Federal Paper Board Co. Inc.	5	Coated boards	425	1	MF	168			S/F
					1	MF	145			
Stratford	Tilo Co., Inc.	7	Roofing felt	35	1	C	76			
Uncasville	Connecticut Paperboard Co.	1	Corrugating medium	110	1	F	192			
Versailles	Federal Paper Board Co.	1	Coated board	205	1	C	82			Paper mill is idle
					1	C	92			

TABLE A-2-6 (Cont'd.)

State: Connecticut (con't)

PULP AND PAPER MILLS IN THE UNITED STATES

New England Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Windsor	Stevens Paper Mills, Inc.	6	Fibreboard	8	2	R	56			
Windsor Locks	Dexter Corp.	6	Specialty papers	60	5	F	82			
					3	F	132			
					1	F	186			
					1	F	24			
					1	MF	n.a.			

TABLE A-2-7

State: New York

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Amsterdam	Sonoco Products Co.	1	Kraft paper	65	1	C	69			
Ancram	Peter J. Schweitzer Div.	3	Tissue	11	1	F	82			
					1	F	56			
Au Sable Forks	J & J Rogers Co.	5	Printing paper	100	1	F	112			
					1	F	76			mill is idle
Battenville	Bio-Tech Mills Inc.	3	Tissue	54	1	F	72			
					2	F	84-86			
Beaver Falls	Latex Fiber Industries Inc.*	6	Specialty automotive products	15	1	C	60			
					1	F	60			
	Latex Fiber Industries Inc.*	4	Combination board various papers	65	1	C	64	GW	60	
					1	C	80			
					1	MF	64			
Brownville	Brownville Paper Co.	5	Specialty board products	15	2	F	60-62			
	Latex Fiber Industries Inc.*	1	Various kraft products	60	1	C	102			
Carthage	Climax Mfg. Co.	4	Boxboard	100	1	C	102			
	Crown-Zellerbach Corp.	3	Tissue	130	1	F	142	DI	40	S/F
					1	F	122			
					1	F	82			
Castleton-on-Hudson	Brown Co.	4	Folding boxboard	100	1	C	88			
Chatham	Columbia Corp.	5	Various printing products	100	1	C	72			S/F
Clayville	Doeskin Inc.	3	Tissue	70	1	F	82			
					1	F	123			
					1	F	132			

*Formerly J.P. Lewis Co.

TABLE A-2-7 (Cont'd.)

State: New York (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Cohoes	Mohawk Paper Mills Inc.	5	Printing paper	75	1	F	100			
Corinth	International Paper Co.	2	Groundwood printing paper	440	1	C	72	GW	255	
					2	F	142			
					1	F	186			
Cornwall	Cornwall Paper Mills Co.	1	Corrugating medium	200	1	F	90			
					1	F	100			
Deferiet	St. Regis Paper Co.	5	printing papers	450	2	F	141-146	SO_3	n.a.	mill is idle; S/F
					2	F	112-117	GW	275	
					1	F	134			
					1	F	204			
Deposit	Celotex Corp	6	Coreboard	200	1	D	61W	SF	n.a.	
Fayetteville	McIntyre Bros Paper Co. Inc.	6	Kraft paper	11	2	C	80			
Ford Edward	Scott Paper Co.	3	Tissue	165	3	F	93			S/F
					1	MF	93			
Fort Miller	Cottrell Paper Co. Inc.	–	Rag pulp	3.5				Rags		
Fulton	Armstrong Cork Co.	7	Felt	n.a.	1	C	n.a.			
					2	F	n.a.			
	North End Paper Co.	3	Wrapping tissue	8	1	C	81			
	Sealright Co. Inc.	4	Food container board	80	1	C	92			
Glens Falls	Finch, Pruyn & Co. Inc.	5	Printing paper	350	1	F	138	SO_3	250	
			Text, vellum		2	F	108			
					1	F	170			
Gouverneur	Groveton Papers Co.	3	Tissue	50	2	F	148			

TABLE A-2-7 (Cont'd.)

State: New York (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Green Island	Manning Paper Co.	7	Fiber paper, specialty papers	43	2	C	96	Rope	5	
					1	C/F	96			
Greenwich	Hollingsworth & Vose Co.									
	– Blandy Paper Div.	7	Filter paper, specialty papers	15	1	MF	71			
	– Hovotex Div.	6	Automotive specialty papers	40	1	MF	90			
	Standard Packaging Corp.	3	Tissue	25	1	F	144			mill is idle
	Stevens & Thompson Paper Co.	3	Tissue	60	2	C	67-69			
					2	C	61			
					2	C	78			
Herkimer	Pennsylvania Egg Carton Corp	–	Egg cartons	4	2	pulpmolders				mill is idle
Hoosick Falls	Wood Flong Corp	6	Stereotype matrix	15	1	C	110			
					3	W	50-52			
Little Falls	Burrows Paper Co.	3	Tissue	25	1	F	84			
					1	F	90			
					1	F	124			
	Mohawk Valley Paper Co.	3	Tissue	25	2	F	84			
					1	F	90			
Lockport	Beaverboard Co. Inc.	1	Linerboard	100	1	C	100			
	Upson Co.	7	Wallboard	180	1	MF	104			
Lyons Falls	Burrows Paper Corp.	3	Tissue	40	1	F	164			

TABLE A-2-7 (Cont'd.)

State: New York (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	Georgia-Pacific Corp.	5	Printing paper	190	1	F	90			
					1	F	102			
					1	F	140			
Marcellus Falls	Martisco Paper Co. Inc.	6	Grey Bogus	15	1	C	80			
Mechanicville	Thomas A. Galante & Sons Inc.	3	Tissue	80	1	F	175	DI	40	
	Saratoga Board Mills Corp	1	Corrugating medium	250	1	F	124	NSSC	158	pulpmill dismantled S/F
Napanoch	Roundout Corp	3	Tissue	18	2	C	81			
Newton Falls	Newton Falls Paper Mill Inc.	5	Printing paper	400	1	F	147	DI	80	S/F
					1	F	120			
					1	F	108			
					1	F	86			
Niagara Falls	Cellu Products Inc.	5	Printing paper	190	2	F	186	GW	100	
		3	Tissue	120	4	F	120			
Norfolk	Simplicity Pattern Co. Inc.	3	Pattern tissue	60	1	F	92			
					1	F	152			
North Tonawanda	Boundary Paper Mills Inc.	1	Linerboard	45	1	C	80			
					1	F	88			
	International Paper Co.	5	Specialty book papers	280	2	F	190	S	135	
Oakfield	United States Gypsum Co.	7	Gypsum board	105	1	C	105			
Ogdensburg	Diamond International Corp	–	Molded pulp	n.a.	pulpmolders			GW	n.a.	S/F
Oswego	Hammermill Paper Co.	5	Printing paper	100	1	F	156			
Penn Yan	Penn Yan Paper Products Co.	7	Felt	45	1	C	81			mill is idle
Phoenix	Burrows Tissue Co. Inc.	3	Tissue	25	2	F	84			
Piermont	Clevepak Corp	1,4	Liner-boxboard	160	1	C	117			
Plattsburgh	Diamond International Corp	–	Molded pulp	n.a.	pulpmolders			GW	n.a.	S/F

TABLE A-2-7 (Cont'd.)

State: New York (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification		Major	Paper Mill		Paper Machines			Pulp Mill		
City	Company	Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	Georgia Pacific Corp	3	Tissue	170	1	F	166	chemi-mechanical	120	
					2	F	126			
					2	F	80			
	Imperial Wallpaper Mill Inc.	5	Printing paper	40	1	F	82	GW	35	pulpmill is idle
Potsdam	Nekoosa Edwards Paper Co. Inc.	5	Various book papers	100	1	F	124			
					1	F	120			
Pulaski	Schaeller Technical Papers Inc.	6	Photographic papers	75	1	F	142			
Red Hook	Atlantic Asbestos Corp.	7	Asbestos	12	1	C	40			
Rochester	Eastman Kodak Co.	6	Photographic base papers	n.a.	n.a.	F	n.a.			
	Flower City Tissue Mills Co.	3	Specialty tissue	20	1	F	82			
Rock City Falls	Cottrell Paper Co. Inc.	7	Insulation board	6	1	C	62			
Saugerties	Empire State Paper Co. Inc.	7	Insulating paper	15	1	F	78	Rags		mill is idle
					1	F	86			
South Glens Falls	Patrician Paper Co. Inc.	3	Tissue	130	2	F	140-142			S/F
					1	F	82			
Thomson	Hudson Pulp & Paper Corp	3	Tissue	80	2	F	124			S/F
					1	F	132			
Ticonderoga	International Paper Co.	5	Printing paper	600	1	F	282	K	590	
					1	F	215			
Tonawanda	Spaulding Fibre Co. Inc.	6	Impregnating specialty papers	25	2	F	65	Rags	15	
Utica	Foster Paper Co. Inc.	4	Combination board	75	1	C	68			
Walloomsac	Columbia Corp	7	Chipboard, various papers	100	1	C	82			S/F
Warrensburg	Warrensburg Board & Paper Corp.	1	Corrugating medium	65	1	F	87			

TABLE A-2-7 (Cont'd.)

State: New York (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Waterford	Mohawk Paper Mills, Inc.	5	Writing papers	60	2	F	66			
Watertown	Knowlton Brothers Inc.	6	Specialty photographic papers	20	1	F	58	Rags		
					1	F	20			
					1	F/C	80			

TABLE A-2-8

State: New Jersey

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
Bloomfield	Marcal Paper Mills Inc.	3	Tissue	20	1	F	89			
Camden	Kaiser Gypsum Co. Inc.	1	Kraft pulp boards	100	1	C	108			
					1	C	100			
	Latex Fibre Industries Inc.	7	Specialty fibreboard products	40	1	C	108			
Clark	United States Gypsum Co.	7	Gypsum board liners	240	1	MF	158			
Clifton	Whippany Paper Board Co. Inc.	1,4	Liner-boxboard	350	1	C	134			S/F
					1	F	114			
Delair	Georgia-Pacific Corp.	7	Gypsum board liner	200	1	C	103			S/F
Elizabeth	Peter J. Schweitzer Div.	5	Printing paper	33	2	F	98W			
					1	F	126W			
					1	F	137W			
Elmwood Park	Marcal Paper Mills Inc.	3	Various papers	n.a.	2	F	135	DI	n.a.	S/F
Garfield	Garden State Paper Co. Inc.	2	Newsprint	450	1	F	210	DI	560	S/F
					1	F	240			
Garwood	National Gypsum Co.	7	Gypsum board liner	115	1	C	102			
Gloucester City	GAF Corp.	7	Felts	300	1	C	84	SF	192	
					1	C	114			
					1	C	150			
Hughesville	Riegel Products Corp.	7	Fibreboard specialty papers	28	1	F/MF	98			
Jersey City	John F. Boyle Co.	2	Newsboard	100	1	C	94			
	The Davey Co.	7	Fibreboard	100	1	W	104			
					1	W	125			
					1	W	170			

TABLE A-2-8 (Cont'd.)

State: New Jersey (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	United States Gypsum Co.	7	Felt	72	1	C	80			
Kearney	Western Electric Co.	7	Insulation paper	20	17	C	39W			
					1	F	32			
Linden	Celatex Corp	7	Asbestos products	50	1	C	42			
					1	C	84			
Manville	Johns-Manville Products Corp	7	Asbestos felts	150	2	C	72	SF	75	
					1	C	108			
Milford	Riegel Products Corp	6	Industrial specialty products	185	2	F	88			
					2	F	98			
					1	F	128			
Millington	National Gypsum Co.	7	Asbestos	140	1	W	50			
Milltown	Cel-Fibe	3	Tissue	150	2	F	132			
Mount Holly	McGraw Edison Co.	6	Fibre pipe	n.a.	1	C	120			
Newark	Newark Boxboard Co.	2	News, specialty paper	110	1	C	70			
Paterson	Morris Paper Board Co. Inc.	4	Folding boxboard	110	1	C	72			
Perth Amboy	Celatex Corp.	7	Felt	100	1	C	126	SF	50	
Ridgefield	Lowe Paper Co.	4	Folding boxboard	140	1	C	92			S/F
Ridgefield Park	Lincoln Paper Co.	6	Cylinder board	175	1	C	92W			S/F
					1	C	81W			
Riegelsville	Riegel Products Co.	6	Automotive products	15	1	F	66			
Riverside	Conwed Corp.	7	Padding	n.a.	1	MF	130			
Spotswood	Peter J. Schweitzer Div.	5	Fine paper	80	4	F	128W			
					2	F	137-139			

TABLE A-2-8 (Cont'd.)

State: New Jersey (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Warren Glen	Riegel Products Corp.	1	Kraft products	80	1	C	84			
					1	C	108			
West Trenton	Homasote Co.	6	Industrial papers	350	15 board formers					
Whippany	Whippany Paper Board Co.									S/F
	Eden Mill	1,4	Corrugating medium liner-boxboard	1000	1	C	104			
					1	C	135			
					2	F	230			
	Hanover Mill	4	Boxboard, specialty boards	150	1	C	112			
	Stony Brook Mill	4	Boxboard, specialty boards	150	1	C	64			
					1	C	81			

TABLE A-2-9

State: Pennsylvania

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Ambler	Nicolet Industries Inc.	7	Asbestos	40	1	C	73			
		6	Millboard	9	1	W	42			
Bridgeport	Budd Co.	–	Special rag paper	30	1	F	58	Rags	30	
					1	F	68			
Bristol	Peterson Parchmont Paper Co.	6	Specialty indus. papers	90	3	F	85-89			
					1	F	73			
Buck Run	Pennsylvania General Paper Co.	3	Tissue	25	1	F	70			
Chambersburg	United States Paper Mills Inc.	3	Tissue	35	2	C	85			
Chester	Scott Paper Co.	3	Tissue	900	9	F	177			S/F
					1	F	198			
					1	MF	195			
Delaware Water Gap	Packaging Corp of America	7	Chipboard	100	1	C	94			S/F
Downington	Brandywine Paper Corp	6	Tube, specialty papers	45	1	C	80			
	The Davey Co.	7	Specialty fiber papers	60	1	W	70			
					1	W	78			
					1	W	119			
	Shryock Brothers	6	Binders board	25	1	W	84			
	Sonoco Products Co.	4	Combination news board	350	1	C	120			
					1	C	90			
					1	C	100			
Emmaus	Lloyd A. Fry Roofing Co.	7	Felt	115	1	C	114			
					1	C	72			

TABLE A-2-9 (Cont'd.)

State: Pennsylvania (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Erie	GAF Corp.	7	Asbestos	80	1	C	76			
					1	W	50			
	Hammermill Paper Co.	5	Writing printing papers	447	3	F	90-91	NSSC	640	
					1	F	98			
					1	F	108			
					1	F	116			
					1	F	160			
Exton	Exton Paper Manufacturers Inc.	3	Tissue	10	1	F	90			
Johnsonburg	Penntech Papers Inc.	5	Specialty printing papers	320	1	F	180	?	190	Bl Hwd Kraft
					3	F	138-142			
Lancaster	American Paper Products Co.	2	Newsboard	50	1	C	70			
Lebanon	Henry Molded Products Inc.	–	Molded pulp	12	3	pulpmolders				
Lewisburg	International Paper Co.	–	Non-woven products	n.a.	1	W	n.a.			
Lititz	Garden State Paper Co. Inc.	3	Tissue	50	1	F	92	DI	50	S/F
					1	F	80			
	Woodstream Corp.	–	Molded pulp products	n.a.	3	pulpmolders				
Lock Haven	Hammermill Paper Co.	5	Printing paper	400	3	F	138-140	S		pulp mill is dismantled
					2	F	146-150			
					1	F	105			
Mehoopany	Charmin Paper Products Co.	3	Tissue	n.a.	6	F	n.a.			
Milton	National Gypsum Co.	7	Gypsum board liner	290	1	C	153	DI	150	

TABLE A-2-9 (Cont'd.)

State: Pennsylvania (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
Miquon	Weyerhaeuser Co.	5	Specalty printing papers	210	2	F	78-82			
					2	F	105-108			
					1	F	112			
Modena	Valley Paper Mills Inc.	3	Tissue specialties	n.a.	1	F	108			
Mount Holly Springs	Eaton Dikeman	7	Industrial filters	12	1	F	80	Rags		
	Peter J. Schweitzer Div.	3	Condenser tissue	15	1	F	82W			
					1	F	100W			
					1	F	137W			
Norristown	Nicolet Industries Inc.	7	Asbestos felt	100	2	C	84			
					1	F	88			
					1	W	48			
Oakmont	United States Gypsum Co.	6	Grocery sack paper	60	1	F	88			
Paxinos	Cellu-Products Co.	3	Tissue	15	2	C	84			
Philadelphia	Celotex Corp	7	Felt	140	1	F	144	SF	160	
	Connelly Containers Inc. of Philadelphia	1	Corrugating medium	150	1	F	81			
					1	F	102			
	Container Corp of America	4	Boxboard	450	1	C	129			S/F
					1	MF	148			
	Crown Paper Board Co. Inc.	7	Combination chip board	85	1	C	74			
	Marcal Paper Mills Inc.	3	Tissue	25	1	F	88			
	Newman & Co. Inc.	4	Boxboard	190	1	C	116			
Ransom	Potlatch Corp.	3	Tissue	100	1	F	132			
					1	F	165			

TABLE A-2-9 (Cont'd.)

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

State: Pennsylvania (Con't)

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Reading	Beacon Paper Mills Inc.	1	Corrugating medium	30	1	F	64			
	Federal Paper Board Co. Inc.	4	Folding boxboard	35	1	C	42			S/F
	Georgia-Pacific Corp	5	Special printing papers	50	1	F	90			
	Interstate Intercorr Corp.	1	Corrugating medium	100	1	C	105			
					1	F	68			
Riegelsville	Whippany Paper Board Co.	1	Linerboard, corrugating medium	175	1	F	184			S/F
Roaring Spring	Appleton Papers Inc.	5	Printing papers	190	1	F	72	BK	180	
					1	F	108			
					1	F	120			
Spring Grove	P.H. Glatfelter Co.	5	Various book papers	500	1	F	52	BK	500	
					1	F	68			
					1	F	78			
					1	F	92			
					1	F	150			
					2	F	170-172			
					1	F	188			
Sunbury	Celotex Corp.	7	Wallboard	150	1	F	156	NSSC	150	
Towanda	Masonite Corp.	7	Hardboard	500		n.a.		SF	500	
Tyrone	Westvaco Corp.	6	Communications papers	100	1	F	144			
					1	F	83			
West Conshohocken	Westfield River Paper Co. Inc.	6	Specialty papers	51	1	F	105			mill is idle
					1	F	120			
Whitehall	GAF Corp.	7	Felt	105	1	F	165W			

TABLE A-2-9 (Cont'd.)

State: Pennsylvania (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

Middle Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Williamsburg	Westvaco Corp	1	Corrugating medium	215	1	F	98	NSSC		pulpmill is dismantled
					1	F	112			
York	Certain-Teed Products Corp	7	Felt	90	1	C	112	SF	45	
	St. Regis Paper Co.	1	Corrugating medium	325	1	C	80			
					1	F	81			
					1	F	151			
	Yorktowne Paper Mills Inc.	4	Boxboard	95	1	C	60			
					1	C	62			

TABLE A-2-10

State: Ohio

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Avery	Certain-Teed Products Corp.	7	Felt	80	1	C	84	SF	110	
Baltimore	Crown Zellerbach Corp.	1	Corrugating medium	190	1	C	87			S/F
					1	C	132			
Brecksville	Tecumseh Corrugating Box Co.	1	Corrugating medium	70	1	F	78			
Chagrin Falls	Chase Bag Co.	5	Specialty industrial papers	80	1	C	58			
					1	F	120			
Chillicothe	Mead Corp (Area I)	5	Printing papers	490	1	F	91	BK	600	
					1	F	121			
					2	F	140			
					2	F	148			
					1	F	200			
	Mead Corp (Area II)	5	Specialty printing papers	373	1	F	126			
					1	F	143			
					1	F	163			
					1	F	176			
Cincinnati	Celotex Corp	7	Felt	200	3	C	72	SF	100	
					1	C	114			
	Container Corp. of America	1,4	Liner & boxboard	120	1	C	120			S/F
	Mead Corp.	7	Specialty chip boards	165	1	C	82			S/F
					1	F	72			
	Olin Pulp Mills Inc.	–	Market pulp	25	–	–	–	SF	25	

TABLE A-2-10 (Cont'd.)

State: Ohio (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
Circleville	Container Corp of America	1	Corrugating medium	300	1	F	146	NSSC	300	
Columbus	St. Regis Paper Co.	6	Specialty waxed paper	35	1	F	80			
Coshocton	St. Regis Paper Co.	1	Corrugating medium chipboard	145	1	F	104			S/F
	Stone Container Corp.	1	Corrugating medium chipboard	550	1	F	166	NSSC	450	
				100	1	F	156			
Dayton	Howard Paper Mills Inc.	6	Specialty sulphite papers	100	1	F	120			S/F
					1	F	78			
Franklin	Cheney Pulp & Paper Co.	–	–	–	–	–	–	Specialty	17	
	Logan-Long Co.	7	Felt	100	1	C	108	SF	60	
		7	Asphalt roofing and siding	250						
	Maxwell Paper Corp.	1	Corrugating medium	200	1	F	146			
	Stone Container Corp.	4	Folding boxboard	125	1	C	93			
Gypsum	United States Gypsum Co.	7	Plaster board products	105	1	C	104			
Hamilton	Beckett Paper Co.	5	Writing paper	140	1	F	120			
					1	F	102			
					1	F	81			
					2	F	90			
	Champion International	5	Specialty writing papers	510	2	F	110	DI	87	
					1	F	118			
					3	F	130			
					1	F	150			

TABLE A-2-10 (Cont'd.)

State: Ohio (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	Nicolet Industries Inc.	6	Gasket papers	70	1	C	76			
Lancaster	Loroco Industries Inc.	1	Linerboard	100	1	C	96			S/F
					1	C	72			
Lockland	Diamond International Corp.	4	Folding boxboard	250	1	C	128			S/F
					1	C	132			
	Fox Paper Co.	6	Specialty kraft paper	110	2	F	124			
					1	F	84			
Massillon	Cleaners Hanger Co.	1	Linerboard	n.a.	1	F	107			
	Greif Board Corp.	1	Linerboard	90	1	F	105			
					1	F	148			
	Stark County Paper Co.	7	Chipboard	30	1	C	76			
					1	C	52			
Miamisburg	Interstate Folding Box Co.	4	Boxboard	100	1	C	101			
Middletown	Crystal Tissue Co.	3	Tissue	80	3	F	120			
					1	F	100			
					1	F	65			
	Diamond International Corp.									S/F
	Fiber Products Div.		Egg containers	n.a.	pulp molders					
	Paperboard Div.	4	Folding boxboard	250	1	C	111			
					1	C	123			
	Harding-Jones Paper Co.	5	Writing paper	20	1	F	72	Rags	5	
	Mead Corp.	6	Absorbent papers	25	1	F	75			
	Middleton Paperboard Co.	1	Chip – kraft board	100	1	C	80			

TABLE A-2-10 (Cont'd.)

State: Ohio (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	Sorg Paper Co.	5	Various printing papers	385	2	F	113			
					1	F	100			
					1	F	106			
					1	F	108			
					1	F	140			
					1	MF	78			
Munroe Falls	Sonoco Products Co.	6	Tube board	65	1	C	66			
Rittman	Packaging Corp. of America	1,4	Box-linerboard kraft	600	1	C	96			S/F
					1	C	115			
					1	C	120			
Sandusky	Cellulo Co., Inc.	7	Filter paper, asbestos	n.a.	1	F	18			
					1	F	36			
					1	F	50			
Steubenville	Federal Paperboard, Co., Inc.	1,4	Corrugating medium boxboard	171	1	C	98			
					1	F	108			
Toronto	Toronto Paperboard Co.	6	Tube board	95	1	C	72			
					1	C	81			
Urbana	Howard Paper Mills Inc	5	Printing paper	60	2	F	76			S/F
West Carrollton	Bergstrom Paper Co.	5	Envelope & writing paper	400	1	F	122	DI	250	S/F
					1	F	139			
					1	F	173			
	Oxford Paper Co.	5	Writing paper	180	2	F	127	DI	55	S/F
					1	F	108			
					1	F	148			

TABLE A-2-11

State: Indiana

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
Brookville	Lloyd A. Fry Roofing Co.	7	Felt	50	1	C	84			
Brownstown	Kieffer Paper Mills Inc.	7	Chip & specialty board	125	1	C	41			
					1	C	54			
					1	C	64			
					1	C	80			
					1	F	98			
Carthage	Container Corp. of America	1	Corrugating medium	96	1	F	83	NSSC	n.a.	Pulpmill is idle S/F
Columbia City	Fibre Form Corp.	–	Molded pulp	n.a.		n.a.				
Eaton	Clevepak Corp.	7	Chipboard	100	1	C	80			
Gary	Georgia-Pacific Corp.	3	Towelling	80	1	F	110	DI	80	
Griffith	Packaging Corp. of America	–	Egg cartons	60	7	pulp molders				S/F
Hammond	Keyes Fibre Co.	–	Egg cartons	n.a.	pulp molders					
Hartford City	Minnesota Mining & Mfg Co.	5	Printing papers	50	1	F	82			
					1	F	98			
					1	F	100			
Indianapolis	Beveridge Paper Co.	6	Industrial specialty paper	60	1	C	74			S/F
Lafayette	Alton Box Board Co.	6	Laminated indust. boards	100	1	C	112			
Mishawaka	Lloyd A. Fry Roofing Co.	7	Felts	90	1	F	80			
Newport	Inland Container Corp.	1	Corrugating medium	350	1	F	n.a.			Under construction S/F
					1	C	126			
Terre Haute	Weston Paper & Mfg. Co.	1	Corrugating medium	370	1	F	162	NSSC	270	
Vincennes	Vincennes Paper Mills Inc.	6	Tube stock	80	1	C	64			
Wabash	Container Corp. of America	4	Combination box-board	250	1	MF	108			S/F
					1	C	88			

TABLE A-2-12

State: Illinois

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Alsip	F.S.C. Paper Corp.	2	Newsprint	265	1	F	242	DI	315	
Alton	Alton Box Board Co.	1	Corrugating medium	800	1	C	106	NSSC	200	S/F
					1	C	134			
					1	F	200			
					1	F	152			
					1	W	170			
Aurora	The Davey Co.	7	Fiberboard	100	2	W	125			
Chicago	Bird & Son, Inc.	7	Felt	106	1	C	148	SF	42	
	Container Corp. of America	1,4	Liner – box – container board	140	1	C	120			S/F
	Lloyd A. Fry Roofing Co.	7	Felt	120	1	C	120			
	Western Electric Co.	6	Cable paper	35	24	C	36W			
					2	F	28W			
					1	C	80			
East St. Louis	Certain-Teed Products Corp.	7	Felt	100	1	C	76	SF	n.a.	
Freeport	Minnesota Mining & Mfg. Co.	6	Cellulose specialties	35	1	C	56			
Joliet	GAF Corp.	7	Felts	230	1	C	150	SF	100	
					1	C	100			
	Johns-Manville Perlite Corp.	7	Insulation board	50	1	F	150			
					1	F	104			
	Prairie State Paper Mills	1	Kraft products	150	1	F	116			
Marseilles	Nabisco Inc.	4	Boxboard	155	1	C	124			
Morris	Federal Paper Board Co., Inc.	4	Paper board	180	8	C	122			S/F
Mount Carmel	The Flintkote Co.	7	Felt	75	1	C	60	SF	40	S/F
Pekin	Quaker Oats Co.	4	Boxboard	80	1	C	69			
Peoria	Bemis Co., Inc.	6	Kraft papers	50	1	C	86			
					1	F	76			

TABLE A-2-12 (Cont'd.)

State: Illinois (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	Celotex Corp.	7	Felt	215	2	C	108	SF	90	
Quincy	Celotex Corp.	7	Gypsum board	300	1	C	94			
					1	C	110			
Rockton	Sonoco Products Co.	1	Newsboard	50	1	C	75			
Taylorville	Georgia-Pacific Corp.	5	Specialty printing papers	100	1	F	114			
					1	F	123			
Waukegan	Johns-Manville Products Corp.	7	Felts	160	1	C	75			
					1	C	120			
Wilmington	Celotex Corp.	7	Felts	60	3	MF	72	GW	30	
	Diamond International Corp.	3	Tissue	n.a.	1	B	85			

TABLE A-2-13

State: Michigan

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Alpena	Abitibi Corp.	7	Hardboard	400	1	F	156	SF	430	
					1	F	48			
	Fletcher Paper Co.	5	Printing papers	65	2	F	100			
Battle Creek	Michigan Carton Co.	4	Boxboard	450	1	C	130			S/F
					1	MF	120			
					1	MF	96			
Cheboygan	Charmin Paper Products Inc.	3	Tissue	100	2	F	130			
Constantine	Simplex Industries Inc.	7	Chipboard	50	1	C	98			
Detroit	Scott Paper Co.	3	Tissue	190	3	F	124			S/F
					1	F	120			
Escanaba	Escanaba Paper Co.	2	Publication paper	600	1	F	155	BK	600	
					1	F	274	GW	150	
Filer City	Packaging Corp. of America	1	Corrugating medium	400	1	F	158	NSSC	400	
					1	F	148			
Kalamazoo	Allied Paper Co.	5	Printing papers	450	2	F	127			S/F
					1	F	108			
					1	F	124			
		6	Specialty papers	75	1	F	112			
		5	Coated book	100	1	F	142			
	Brown Co.									S/F
	Specialty Papers Div.	6	Industrial papers	350	1	F	104			
					2	F	126			
					3	F	148			
	Combination Paperboard Div.	4	Boxboard	300	1	C	120			
					1	C	138			

TABLE A-2-13 (Cont'd.)

State: Michigan (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	Georgia-Pacific Corp.	5	Printing paper	400	1	F	130	DI	80	S/F
					2	F	156			
					1	F	167			
	Hawthorne Paper Co.	5	Printing paper	50	1	F	82			S/F
					1	F	92			
	Minnesota Mining & Mfg. Co.	6	Industrial paper	18	1	F	103			mill is idle
	National Gypsum Co.	7	Gypsum board	155	1	C	100			
L'Anse	Celotex Corp	7	Construction materials	270	1	F	165	SF	n.a.	
Manistique	Manistique Pulp & Paper Co.	2	Newsprint	150	1	F	154	GW	90	S/F
								DI	75	
					1	F	154			
Menominee	American Can Co.	6	Waxed paper	300	1	F	128			
	Scott Paper Co.	—	—	—	—	—	—	GW	22	mill is idle
Monroe	Consolidated Packaging Corp.	6	Test liner	160	1	C	118			S/F
		1	Corrugating medium	230	1	F	115			
		4	Boxboard	425	1	F	84			
					1	C	102			
					2	C	112			
	Time Container Corp.	1	Linerboard	110	1	C	110			S/F
	Union Camp Corp.	1	Linerboard, corrugating medium	300	1	C	98			S/F
					2	C	108			
Munising	Kimberly-Clark Corp.	5	Printing paper	78	2	F	120			
Muskegon	Tekmold Inc.	—	Molded pulp	8	2	pulp molders				
	S. D. Warren Co.	5	Printing papers	350	1	F	98	BK	240	
					1	F	122			
					1	F	144			
					1	F	200			

TABLE A-2-13 (Cont'd.)

State: Michigan (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
Niles	French Paper Co.	5	Printing papers	60	1	F	84			
					1	F	105			
	Simplicity Pattern Co. Inc.	3	Pattern tissue	33	1	C	120			
					1	MF	150			
Ontonagon	Hoerner Waldorf Corp.	1	Corrugating medium	275	1	F	162	NSSC	220	
Otsego	Mead Corp.	4	Boxboard	170	1	C	129			
	Menasha Corp.	1	NSSC Corrugating medium	331	1	F	160	NSSC	225	
					1	F	80			
Palmyra	Simplex Industries Inc.	7	Binderboard	15	1	C	78			
					1	W	60			
		4	Boxboard	50	1	W	130			
Plainwell	Plainwell Paper Co. Inc.	5	Industrial & book paper	200	1	F	98			
					2	F	120			
Port Huron	Dunn Paper Co.	5	Specialty papers	105	2	F	124			
					1	F	122			
					1	F	138			
	Port Huron Paper Co.	1	Kraft specialties	175	1	F	123			
					1	F	127			
					1	F	120			
					1	F	160			
					1	F	186			
Rochester	Rochester Paper Co.	6	Industrial papers	70	1	F	62			
Rockford	Rockford Paper Mills Inc.	4	Boxboard	110	1	C	67			
Vicksburg	Simpson Lee Paper Co.	5	Various printing papers	100	1	F	121	Rags		S/F
					1	F	119			
					1	F	107			

TABLE A-2-13 (Cont'd.)

State: Michigan (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Watervliet	Watervliet Paper Co.,	5	Printing papers	130	1	F	114			
White Pigeon	Weyerhaeuser Co. Paperboard Div.	4	Boxboards	200	1	F	126			
					1	C	92			
					1	MF	112			
Ypsilanti	Peninsular Paper Co.	1	Kraft specialties	50	1	F	80			
					1	F	57			

TABLE A-2-14

State: Wisconsin

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Appleton	Consolidated Papers Inc.	–	–	–	–	–	–	SO_3	175	
	Fox River Paper Co.	5	Writing papers	50	1	F	96			S/F
					1	F	78			
	Riverside Paper Corp.	5	Writing papers	95	1	F	105	DI	50	S/F
					1	F	98			
Ashland	American Can Co.	3	Tissue	51	1	F	80	DI	60	
					1	F	100			
Beloit	Beloit Box Board Co., Inc.	6	Packaging materials	40	1	C	75			S/F
Brokaw	Wausau Paper Mills Co.	5	Printing papers	270	1	F	98	SO_3	142	
					1	F	110			
					1	F	103			
					1	F	78			
Cedarburg	Format Containers Inc.	–	Molded pulp	n.a.	pulp molders					
Combined Locks	Appleton Papers Inc.	2	Groundwood specialties	400	1	F	86	chemi-mech	200	
					1	F	225			
					1	F	120			
					1	F	163			
Cornell	The Flintkote Co.	7	Felt	200	1	C	100	GW	50	S/F
					1	C	130			
De Pere	Nicolet Paper Co.	7	Treated papers	130	1	F	75			
					1	F	100			
					2	F	140			
	U.S. Paper Mills Corp.	1	Chipboard	50	1	F	72			

TABLE A-2-14 (Cont'd.)

State: Wisconsin (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Eau Claire	Brown Co.	3	Tissue	160	1	F	96	GW	60	
					1	F	121	DI	150	
					2	F	126			
Green Bay	American Can Co.	3	Tissue	400	1	F	130	SO_3	150	
					2	F	162	GW	60	
					2	F	186			
					1	F	123			
	Charmin Paper Products Co. East River Mill	3	Tissue	n.a.	2	F	94			
					2	F	126			
					1	F	167			
	Fox River Mill	3	Tissue	n.a.	1	F	80	SO_3	n.a.	
					1	F	104	GW	n.a.	
					5	F	198			
	Fort Howard Paper Co.	3	Tissue	800	8	F	124	DI	675	S/F
					1	F	195			
	Green Bay Packaging, Inc.	1	Corrugating medium specialty board	300	1	F	160	NSSC	200	
Kaukauna	Thilmany Pulp & Paper Co.	6	Kraft papers	500	4	F	120	K	400	
					1	F	150			
					1	F	160			
					1	F	186			

TABLE A -2-14 (Cont'd.)

State: Wisconsin (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
Kimberly	Kimberly-Clark Corp.	5	Coated book paper	464	1	F	107	GW	115	
					1	F	127			
					1	F	124			
					1	F	138			
					1	F	168			
Ladysmith	Peavey Paper Mills Inc.	3	Tissue	60	1	F	144	DI	50	
					1	F	102			
					1	F	82			
Marinette	Scott Paper Co.	3	Tissue	175	3	F	124	SO_3	50	Pulp mill is idle
					1	F	103			
Menasha	Mead Corp, Gilbert Paper Div.	5	Specialty writing papers	61	1	F	72	Rags	21	S/F
					1	F	90			
					1	F	104			
	Menasha Corp.	4	Boxboard	250	1	F	72			S/F
					1	C	96			
					1	C	126			
	Geo. A Whiting Paper Co.	5	Printing papers	20	1	F	75			
	Wisconsin Tissue Mills	3	Tissue	85	1	F	132	DI	100	S/F
					1	F	90			
Merrill	Ward Paper Co.	5	Specialty printing papers	60	1	F	118	DI	30	S/F
Milwaukee	Keiding, Inc.	6	Industrial products	n.a.	5	pulp molders				

TABLE A-2-14 (Cont'd.)

State: Wisconsin (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	St. Regis Paper Co.	4	Boxboard	250	1	C	112			S/F
					2	MF	126			
Mosinee	Mosinee Paper Corp.	1	Various kraft papers	240	2	F	96	UBK	174	
					1	F	120			
					1	F	144			
Neenah	Bergstrom Paper Co.	5	Printing paper	300	1	F	142	DI	250	
					1	F	128			
					1	F	172			
	Kimberly-Clark Corp.	7	Cushioning material	70	6	F	120			
		3	Tissue	205	1	F	160			
	Kimberly-Clark Corp.	6	Various printing papers	58	1	F	84	Rags		S/F
					1	F	106			
					1	F	110			
Nekoosa	Nekoosa Edwards Paper Co. Inc.	5	Printing papers	380	1	F	96	K	310	
					1	F	107			
					1	F	114			
					1	F	165			
					1	F	178			
Niagara	Niagara of Wisconsin Paper Corp.	5	Book paper	475	1	F	139	GW	150	
					1	F	145			
					1	F	223			
Oconto Falls	Scott Paper Co.	3	Towels	115	1	F	72	SO_3	110	
					1	F	100			

TABLE A-2-14 (Cont'd.)

State: Wisconsin (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Park Falls	Flambeau Paper Co.	5	Printing paper	300	1	F	98	SO_3	115	
					1	F	122			
					1	F	158			
Peshtigo	Badger Paper Mills Inc.	5	Printing paper	150	1	F	120	SO_3	110	
					1	F	125			
Phillips	Evans Products Co.	7	Hardboard	n.a.		n.a.		SF	n.a.	
Port Edwards	Nekoosa Edwards Paper Co. Inc.	5	Printing-writing paper	370	2	F	97	SO_3	215	
					1	F	106			
					1	F	132			
Rhinelander	St. Regis Paper Co.	6	Various wrapping papers	215	1	F	111	SO_3	120	
					2	F	160			
					1	F	164			
					2	F	120			
Rothschild	Weyerhaeuser Co.	5	Packaging & Printing papers	330	3	F	120	SO_3	200	
					1	F	215			
Shawano	Shawano Paper Mills Inc.	5	Wrapping & printing papers	100	1	F	100			
					1	F	126			
Stevens Point	Consolidated Papers Inc.									
	Stevens Point Div.	6	Specialty papers	95	2	F	124			S/F
	Wisconsin River Div.	5	Enamel back	275	1	F	100	GW	92	
					1	F	110			
					1	F	136			
	Whiting-Plover Paper Co.	5	Writing paper	30	1	F	104	Rags		
					1	F	108			

TABLE A-2-14 (Cont'd.)

State: Wisconsin (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Superior	Superior Fibre Products Inc.	7	Hardboard	140	1	F	68	GW	180	
Tomahawk	Georgia-Pacific Corp.	3	Tissue	20	1	F	84			
	Owens-Illinois Inc.	1	Corrugating medium	620	1	F	79	Semi-mech.	620	S/F
					1	F	124			
					1	F	144			
	Tomahawk Paper & Pulp Co. Inc.	–	Market pulp	–	–	–	–	GW	50	
Waupaca	Filter Materials Inc.	6	Specialty indust. products	8	1	F	54	Rags		
West Bend	McGraw Edison Co.	6	Fibre pipe	50	2	C	120			
					2	C	60			
					1	C	96			
Wisconsin Rapids	Consolidated Papers Inc.	5	Enamel book	415	1	C	104W			
	Wisconsin Rapids Div.	1,4	Box-liner board	90	2	F	119	GW	n.a.	Pulp mill dismantled
					1	F	122			
					1	F	142			
	Kraft Div.	–	Kraft pulp		–	–	–	BK	400	
	Biron Div.	5	Enamel book	540	1	F	99	GW	225	
					1	F	133			
					1	F	144			
					1	F	184			

TABLE A-2-15

State: Minnesota

PULP AND PAPER MILLS IN THE UNITED STATES

West North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Bemidji	Superwood Corp	7	Hardboard	85		n.a.		SF	90	
Brainerd	Northwest Paper Div.	5	Writing paper	225	1	F	112			
					1	F	180			
Cloquet	Conwed Corp.	7	Insulation board	n.a.	1	F	101	GW	n.a.	
					1	F	159			
					1	MF	110			
					1	MF	100			
	Northwest Paper Div.	5	Writing paper	330	1	F	87	BK	400	
					2	F	108	SO_3	120	
					1	F	195			
Duluth	Superwood Corp	7	Hardboard	240	2	C	48	SF	240	
					1	C	62			
					1	F	48			
Grand Rapids	Blandin Paper Co.	5	Printing – groundwood paper	550	1	F	110	chemi-mech	50	
					2	F	141	GW	168	
International Falls	Boise Cascade Corp.	2	Groundwood wrapping paper	460	2	F	173	K	320	
					1	F	143	GW	450	
Little Falls	Hennepin Paper Co.	5	Printing paper	80	1	F	114	GW	75	S/F
Minneapolis	Certain-Teed Products Corp.	7	Felt	120	1	C	78			
					1	C	132			
Sartell	St. Regis Paper Co.	2	Groundwood printing paper	230	2	F	142	GW	125	
Shakopee	Certain-Teed Products Corp.	7	Felt	150	1	C	147			
St. Paul	Hoerner Waldorf Corp	1	Corrugating medium	350	1	F	129	NSSC	300	S/F
					1	F	135			
		7	Moistureproof boards	400	1	C	130	DI	40	
					1	MF	110			

TABLE A-2-16

State: Iowa

PULP AND PAPER MILLS IN THE UNITED STATES

West North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Dubuque	Celotex Corp.	7	Ceiling tile	90	1	F	104	SF	90	
Fort Madison	Consolidated Packaging Corp.	1	Corrugating medium	150	1	F	126	NSSC	140	
Tama	Packaging Corp. of America	4	Boxboard	100	1	C	86			

TABLE A-2-17

State: Missouri

PULP AND PAPER MILLS IN THE UNITED STATES

West North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Boonville	Huebert Fiberboard Inc.	7	Insulation board	75	1	F	96	SF	60	
Joplin	Tamko Asphalt Products Inc.	7	Felt	130	2	C	72			
Kansas City	GAF Corp.	7	Felt	100	1	C	100	SF	90	
Louisiana	Tallman Conduit Co.	6	Pipes	n.a.	3	W	n.a.			
North Kansas City	Lloyd A. Fry Roofing Co.	7	Felt	50	1	C	80			
	United States Gypsum Co.	7	Gypsum linerboard	105	1	C	104			
St. Louis	General Molding Co.	6	Automotive products	n.a.	1	molding machines				
	National Gypsum Co.	7	Asbestos	100	1	W	n.a.			mill is idle

TABLE A-2-18

State: Kansas

PULP AND PAPER MILLS IN THE UNITED STATES

West North Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Hutchinson	Packaging Corp. of America	1	Corrugating medium, linerboard	165	1	C	81			S/F
					1	C	102			
Lawrence	Kansas Fibreboard Inc.	1	Liner-container board	100	1	C	90			
Phillipsburg	Royal Brand Roofing Inc.	7	Felt	70	1	C	72			

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TABLE A-2-19

State: Delaware

PULP AND PAPER MILLS IN THE UNITED STATES

South Atlantic Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
Newark	Curtis Paper Co.	5	Printing papers	25	1	F	58			
					1	F	74			
	NVF Co.	6	Base for fiber	10	1	F	60	Rags	10	
Rockland	Doeskin	3	Tissue	60	2	F	81			
					1	F	102			
					1	F	134			
Wilmington	Container Corp of America	1	Corrugating medium	90	1	F	115			
Yorklyn	NVF Co.									
	Marshall Bros Mill	6	Base for fiber	7.5	1	F	60			
	No. 2 Mill		Base for fiber	20	1	F	60	Rags	20	

TABLE A-2-20

State: Maryland

PULP AND PAPER MILLS IN THE UNITED STATES

South Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Baltimore	Chesapeake Paperboard Co.	4	Newsboard	230	1	C	62			
					1	C	92			
Finksburg	Congoleum Industries Inc.	7	Felt	200	1	C	110	SF	100	
					1	C	152			
					1	F	110			
Freeland	Freeland Paper Mill	6	Wadding	10	1	C	48			Mill is idle
Ilchester	Simkins Industries Inc.	4	Boxboard	170	1	C	67			
					1	C	107			
Luke	Westvaco Corp.	2	Printing papers	900	1	F	79	BK	719	
					2	F	92			
					1	F	100			
					2	F	121			
					1	F	135			
					2	F	210			
Whitehall	Federal Paper Board Co., Inc.	4	Boxboard	40	1	C	62			S/F
Woodbine	Hyman Viener & Sons	6	Lining papers	20	1	F	64			Mill is idle

TABLE A-2-21

State: Virginia

PULP AND PAPER MILLS IN THE UNITED STATES

South Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Big Island	Owens-Illinois Inc.	1	Corrugating medium	550	1	F	100	Semi-chem	550	
					1	F	168			
Buena Vista	Georgia Bonded Fibers Inc.	6	Impreg papers	36	1	F	80			
					1	F	102			
Covington	Westvaco Corp.	1	Linerboard, corrugating medium	1350	2	F	152	UBK	138	
					2	F	194	BK	910	
								NSSC	305	
Danville	United States Gypsum Co.	7	Insulation board	n.a.		n.a.		SF	330	
Doswell	Evans Products Co.	7	Hardboard	n.a.		n.a.		SF	n.a.	
Franklin	Union Camp Corp.	2	Printing paper	1000						
		4	Board	300	1	F	82	UBK	230	
					1	F	190	BK	1200	
					1	F	210			
					1	F	220			
					1	F	230			
					1	F	300			
Hopewell	Continental Can Co.	1,4	Linerboard, corrugating medium,	1060	1	C	108	UBK	896	
			Boxboard		1	F	122	NSSC	167	
					1	F	252			
	Hercules Inc.	–	Market pulp	–	–	–	–	CL	240	
Jarratt	Southern Johns-Manville Products Corp.	7	Insulation board	225	1	C	150	GW	225	
Lynchburg	Mead Corp.	1	Corrugating medium	375	1	C	136	NSSC	190	S/F
					1	F	120			

TABLE A-2-21 (Cont'd.)

State: Virginia (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

South Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Richmond	Federal Paper Board Co., Inc.									S/F
	Seaboard Mill	4	Boxboard	180	1	C	138			
	Southern Mill	4	Boxboard	90	1	C	100			
	James River Paper Co.				1	F	80			
	Standard Paper Mfg. Co.				1	F	80			
					1	F	90			
					1	F	108			
Riverville	Virginia Fibre Corp.	1	Corrugating medium	600	1	F	256	NSSC	n.a.	Mill under construction
West Point	The Chesapeake Corp of Virginia	6	Paper	235	1	F	228	UBK	1150	
		1	Board	730	1	F	256			

TABLE A-2-22

State: West Virginia

PULP AND PAPER MILLS IN THE UNITED STATES

South Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Halltown	Halltown Paperboard Co.	4	Chip boards	160	1	C	72			
					1	C	90			
Wellsburg	Banner Fibreboard Co.	1	Linerboard	75	1	C	90			
	S. George Co.	6	Kraft shipping paper	10	1	C	59	Rope		

TABLE A-2-23

State: North Carolina

PULP AND PAPER MILLS IN THE UNITED STATES

South Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Alma	Paramount Paper Products Inc.	3	Cellulose wadding	33	2	C	100			
					1	C	124			
			Printing papers		1	F	224			
Canton	Champion International	2,4	Packaging board	1420	2	F	218	BK	1360	
					1	F	230			
					2	F	149			
Charlotte	Carolina Paper Board Corp.	4	Boxboard	90	1	C	101			S/F
Lumberton	Alpha Cellulose Corp.		–	–	–	–	–	cotton linter	65	
Moncure	Evans Products Co.	7	Hardboard	n.a.		n.a.		SF	n.a.	
Morehead City	Lloyd A. Fry Roofing Co.	7	Felt	50	1	C	80			
New Bern	Weyerhaeuser Co.		Pulp	–	–	C	–	BK	640	
Patterson	Cellu Products Co.	3	Tissue	35	1	C	60			
					1	C	88			
					1	F	84			
Pisgah Forest	Olin Corp.	5	Specialty printing papers	275	9	F	96	K	n.a.	
					3	F	160			
Plymouth	Weyerhaeuser Co. Paperboard Div.	1	Linerboard corrugating medium	1240	2	F	196	UBK	850	
					1	F	131	BK NSSC	500 250	
	Paper Div.	5	Printing and writing papers	275	1	F	222			
Riegelwood	Federal Paper Board Co.	4	Boxboard	830	2	F	216	K	1100	

TABLE A-2-23 (Cont'd.)

State: North Carolina (Con't.)

PULP AND PAPER MILLS IN THE UNITED STATES

South Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Roanoke Rapids	Albemarle Paper Co.	6	Kraft papers	500	2	F	227	UBK	950	
		1	Linerboard	410	1	F	82			
					1	F	92			
	Federal Paper Board Co, Inc.	4	Chipboard	78	1	C	81			
Roaring River	Abitibi Corp.	7	Hardboard	n.a.	1	F	48	SF	100	
Rockingham	Carolina Paper Mills, Inc.	3	Tissue	40	2	F	72	DI	50	
					1	F	83			
	Goodwin Paper Mills, Inc.	3	Tissue	7	1	C	104			
Sylva	Mead Corp.	1	Corrugating medium	300	1	F	85	NSSC	270	
					1	F	134			

TABLE A-2-24

State: South Carolina

PULP AND PAPER MILLS IN THE UNITED STATES

South Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Beech Island	Kimberly-Clark Corp.	3	Tissue	300	2	MF	204			S/F
Catawba	Bowaters Carolina Corp.	2	Printing papers	240	1	F	218	GW	150	
								BK	940	600 tpd market pulp
	Catawba Newsprint Co.	2	Newsprint	600	1	F	364	GW	500	
	Champion International	7	Hardboard	300	1	D	n.a.	SF	n.a.	
Charleston	Westvaco Corp.	1	Linerboard	1870	2	F	226	UBK	2000	100 tpd market pulp
					1	F	246			
Florence	South Carolina Industries, Inc.	1	Kraft linerboard	640	1	F	166	UBK	660	
					1	F	188W			
Georgetown	International Paper Co.	1	Containerboard, corrugating medium	1675	2	F	195	UBK	1350	
					1	F	198	BK	480	
								NSSC	480	
Hartsville	Sonoco Products Co.	1	Corrugating medium	400	2	C	78	NSSC	400	
		6	Packaging board	400	1	C	117			
					1	C	79			
					1	C	89			
					2	C	91			
					1	C	106			
					1	F	126			
					1	F	176			
Marion	Celotex Corp.	7	Hardboard	360	----	n.a.	-----	SF	360	
Taylors	Carotell Paper Board Corp.	1,4	Chipboard newsboard	125	1	C	110			

TABLE A-2-25

State: Georgia

PULP AND PAPER MILLS IN THE UNITED STATES

South Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Albany	Charmin Paper Products	3	Tissue	n.a.	2	F	n.a.			
Atlanta	Sonoco Products Co.	6	Tube board	110	1	C	64			
					1	C	84			
Augusta	Abitibi Southern Corp.	2	Newsprint	500	1	F	315	GW	300	
	Continental Can Co., Inc.	1	Kraftboard	725	1	F	216	BK	800	
					1	F	182			
Austell	Austell Box Board Corp.	4	Boxboard	300	1	C	110			S/F
					1	C	90			
Brunswick	Brunswick Pulp & Paper Co.	1	Container board	400	1	F	216	BK	1550	1075 tpd market pulp
Cedar Springs	Great Northern Paper Co.	1	Linerboard	1700	1	F	260	UBK	1780	
		1	Corrugating medium	400	2	F	258	NSSC	340	
Cedartown	Alton Box Board Co.	4	Boxboard	48	1	C	60			
Jesup	ITT Rayonier Inc.	–	Market pulp	1200				BK	1200	
Krannert	Georgia Kraft Co.	1	Linerboard	1600	2	F	235	UBK	1500	
Macon	Armstrong Cork Co.	7	Insulation board	n.a.	- - - - n.a. - - - -			Chemi-mechanical	n.a.	
	Georgia Kraft Co.	1	Container board	900	1	F	200	UBK	900	
	Packaging Corp. of America	–	Egg cartons	60	4 pulp molders					S/F
					1	F	94			
Nixon	Southern Glassine Co.	6	Glassine	40	1	F	108			
Port Wentworth	Continental Can Co., Inc.	1	Linerboard	625	1	F	220	UBK	625	
Riceboro	Interstate Paper Corp.	1	Linerboard	550	1	F	166	UBK	525	
Savannah	Certain-Teed Products, Corp.	7	Felt	70	1	C	76	SF	40	

TABLE A-2-25 (Cont'd.)

State: Georgia (Con't.)

PULP AND PAPER MILLS IN THE UNITED STATES

South Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	GAF Corp.	7	Felt	125	1	C	120	SF	60	
	Union Camp Corp.	1	Kraft paper, corrugating medium	2800	7	F	220	UBK	2600	
								NSSC	300	
St. Marys	Gilman Paper Co.	6	Kraft paper	350	2	F	216	UBK	680	
		4	Boxboard	420	1	F	196	BK	420	
		1	Kraft board	320						
Valdosta	Owens-Illinois, Inc.	1	Linerboard	900	1	F	222	UBK	950	
					1	F	85			

③ [illegible] Region on all

TABLE A-2-26

State: Florida

PULP AND PAPER MILLS IN THE UNITED STATES

South Atlantic Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Blountstown	Abitibi Corp.	7	Hardboard	100	1	C	104	SF	100	
Cantonment	St. Regis Paper Co.	1	Linerboard	580	1	F	191	UBK	600	
		4	Paperboard	250	1	F	210	BK	300	
					1	C	92			
		6	Packaging board	80	1	F	144			
Fernandina Beach	Container Corp. of America	1	Linerboard & corrugating medium	1700	1	F	162	UBK	1500	S/F
					2	F	238	NSSC	200	
	ITT Rayonier Inc.	–	Dissolving and market pulp	–	–	–	–	SO_3	420	
Foley	Buckeye Cellulose Corp.	–	Dissolving and market pulp	–	–	–	–	BK	900	
Jacksonville	Alton Box Board Co.	1	Linerboard	625	1	F	216	UBK	675	
	Lloyd A Fry Roofing Co.	7	Felt	60	1	C	80			
	St. Regis Paper Co.	1, 6	Linerboard, wrapping	1300	1	F	214	UBK	1350	
					1	F	255			
	United States Gypsum Co.	7	Gypsum board liner	190	1	C	156			
Miami	Florida Paper Mills Ltd.	3	Wadding	25	1	F	85			
	Lloyd A. Fry Roofing Co.	7	Roofing felt	60	1	C	72			
	Simkins Industries Inc.	4	Boxboard	100	1	C	72			S/F
Palatka	Hudson Pulp & Paper Corp.	6	Kraft paper	550	2	F	220	UBK	600	
					1	F	212			
		3	Tissue	220	1	F	203	BK	350	125 tpd market pulp
Panama City	International Paper Co.	1	Container board	700	2	F	235	UBK	750	
								BK	650	
Pensacola	Armstrong Cork Co.	7	Acoustical board	n.a.	----	n.a.	----			
Port St. Joe	St. Joe Paper Co.	1	Linerboard	1200	1	F	198	BK	1300	300 tpd market pulp
					1	F	218			

TABLE A-2-27

State: Kentucky

PULP AND PAPER MILLS IN THE UNITED STATES

East South Central

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Hawesville	Wescor Corp.	1	Corrugating medium	300	1	F	156	NSSC	300	
	Western Kraft Corp.	–	Market pulp	–	–	–	–	BK	300	
Owensboro	W.R. Grace & Co.	6	Specialty industrial papers	30	1	F	125			
St. Matthews	St. Matthews Pulp Co.	–	Market pulp	–	–	–	–	DI	90	
Wickliffe	Westvaco Corp.	5	Printing paper	350	1	F	231	BK	600	250 tpd market pulp
		–			1	FP	250			

TABLE A-2-28

State: Tennessee

PULP AND PAPER MILLS IN THE UNITED STATES

East South Central

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Calhoun	Bowaters Southern Paper Corp.	2	Newsprint	1600	2	F	233	UBK	500	20 tpd market pulp
					2	F	255	S	200	
								GW	500	20 tpd market pulp
Chattanooga	Container Corp. of America	2,6	Tube & liner board	115	1	C	87			S/F
	Southern Cellulose Products Inc.	–	Market pulp	–	–	–	–	CL	85	
	Southern Specialty Paper Co.	6	Industrial papers	20	1	F	75			
	Tennessee Paper Mills Inc.	4	Boxboard	300	2	C	120			S/F
Counce	Tennessee River Pulp & Paper Co.	1	Kraft linerboard	750	1	F	240			
Covington	Colonial Fiber Co.	7	Fiberboard	60	1	MF	115W			
					1	W	64W			
Harriman	Mead Corp.	1	Corrugating medium	200	1	F	138	NSSC	195	
Kingsport	Mead Corp.	5	Printing papers	443	1	F	159	S	250	
					1	F	103			
					1	F	196			
Knoxville	Southern Extract Co.	1	Corrugating medium	160	1	F	110	NSSC	135	
Memphis	Buckeye Cellulose Corp.	7	Filter paper	150	1	F	124	CL	450	300 tpd market pulp
					1	F	100			
	Celotex Corp.	7	Felt	50	1	C	48	GW	45	
	Lloyd A. Fry Roofing Co.	7	Felt	50	1	C	80			
	Kimberly-Clark Corp.	3	Tissue	315	4	F	160			S/F
New Johnsonville	Inland Container Corp.	1	Corrugating medium	450	1	F	245	NSSC	395	S/F
Newport	Sonoco Products Co.	6	Cone and tube board	80	1	C	95			
					1	C	96			
Paris	Celotex Corp.	7	Hardboard	300	1	n.a.	54W	SF	300	

TABLE A-2-29

State: Alabama

PULP AND PAPER MILLS IN THE UNITED STATES

East South Central

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Anniston	National Gypsum Co.	7	Gypsum board liner	195	1	C	103			
Birmingham	McGraw Edison Co.	6	Fiber pipe	n.a.	1	C	120			
Brewton	Container Corp. of America	1	Linerboard	900	2	F	196	UBK	550	
								BK	350	
Butler	American Can Co.	3,4	Tissue, food board	900	5	F	186	BK	930	
					1	F	216			
Coosa Pines	Kimberly-Clark Corp.	2	Newsprint	1200	2	F	207	BK	585	
					2	F	310	GW	940	
Courtland	Champion International	5	Printing paper	260	1	F	230	BK	500	275 tpd market pulp
Demopolis	Gulf States Paper Corp.	4	Foodboard	450	1	F	216	BK	360	
Jackson	Allied Paper Inc.	5	Printing paper	250	1	F	216	BK	500	250 tpd market pulp; S/F
Mahrt	Alabama Kraft Co.	1	Containerboard	975	1	F	260	UBK	1,000	
Mobile	GAF Corp.	7	Roofing felt	120	1	C	112	SF	48	
	International Paper Co.	2,6	Newsprint, kraft papers	1250	2	F	259	UBK	845	
					1	F	192	BK	455	
					1	F	187			
					1	F	156	GW	300	
					1	F	121			
	National Gypsum Co.	7	Insulation board	350	1	C	150	NSSC	150	
					1	F	150	GW	200	
	Scott Paper Co.	4,5	Printing paper Specialty board Food board	690	1	C	110	UBK, BK	1,400	
		3	Tissue	665	1	F	168			
					1	F	158			
					1	F	213			
					3	F	203			
					2	F	196			
	Stone Container Corp.	1,4	Boxboard, liner-board	135	1	C	96			

TABLE A-2-29 (Cont'd.)

State: Alabama (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

East South Central

Identification		Major	Paper Mill		Paper Machines			Pulp Mill		
City	Company	Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Montgomery	Union Camp Corp.	1	Linerboard	900	1	F	312	UBK	870	
Pine Hill	MacMillan Bloedel Inc.	1	Linerboard	1,000	1	F	312	UBK	1,000	
Selma	Hammermill Paper Co.	–	Market pulp	–	–	–	–	BK	500	
Stevenson	Mead Corp.	1	Corrugating medium	650	1	F	310	NSSC	575	under construction
Tuscaloosa	Gulf States Paper Corp.	6	Kraft paper	500	1	F	218	UBK	500	
					1	F	156			
					1	F	124			

TABLE A-2-30

State: Mississippi

PULP AND PAPER MILLS IN THE UNITED STATES

East South Central

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Greenville	United States Gypsum Co.	7	Hardboard	n.a.		n.a.		SF	240	
Laurel	Masonite Corp.	7	Hardboard	1000	3	F	49	XW	1000	
					2	F	64			
					1	F	104			
Meridian	The Flintkote Co.	7	Insulation board	225	1	F	144	GW	165	
								SF	60	
	Masonite Corp.	7	Felts	70	1	C	144			
Monticello	St. Regis Paper Co.	1	Linerboard	1150	1	F	245	UBK	1620	
		6	Kraft paper	450	1	F	315			
Moss Point	International Paper Co.	6	Kraft papers	715	1	F	96	K	715	
					2	F	123			
					1	F	150			
					1	F	201			
Natchez	Diamond International Corp.	6	Molded pulp	n.a.		pulp molders				S/F
	International Paper Co.	–	Market pulp	–	–	–	–	BK	1000	
	Johns-Manville Products Corp.	7	Insulation board	n.a.	1	F	162W	Dismantled		
Pickens	Burrows Southern Corp.	3	Tissue	18	1	F	126			
Vicksburg	International Paper Co.	1	Liner – container board	1050	1	F	340	UBK	1200	

TABLE A-2-31

State: Arkansas

PULP AND PAPER MILLS IN THE UNITED STATES

West South Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Ashdown	Nekoosa Edwards Paper Co., Inc.	5	Writing paper	200	1	F	230	BK	400	200 tpd market pulp
Bearden	Bear Brand Roofing Inc.	7	Roofing felt	22	1	C	36			
Camden	Celotex Corp.	7	Roofing felt	35	1	C	72			
	International Paper Co.	6	Kraft paper	700	1	F	146	UBK	750	
					2	F	192			
Crossett	Georgia-Pacific Corp.				1	F	190	UBK	840	
	No. 1 Mill	6	Kraft paper	440	1	F	194	BK	410	
	No. 2 Mill	4	Paperboard	410	1	F	198			
	No. 3 Mill	3	Tissue	225	1	F	205			
					2	F	102			
Little Rock	A.R. Felt Mills Inc.	7	Roofing felt	37	1	C	36			
Morrilton	Arkansas Kraft Corp.	1	Linerboard	420	1	F	200	UBK	360	
N. Little Rock	Superwood Corp.	7	Hardboard	140	1	F	52	SF	150	
Pine Bluff	International Paper Co.	4	Coated board	1600	1	F	188	BK	1220	S/F
		2	Newsprint		2	F	275	GW	400	
	Weyerhaeuser Co.	6	Kraft papers	200	1	F	154	UBK	200	
Stephens	Elk Roofing Co.	7	Roofing felt	80	2	C	72	SF	24	

TABLE A-2-32

State: Louisiana

PULP AND PAPER MILLS IN THE UNITED STATES

West South Central Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
Bastrop	International Paper Co. Bastrop Mill	1	Corrugating medium	560	2	F	146	NSSC	560	
	Louisiana Mill	4,6	Kraft paper	975	1	F	174	BK	1100	
					2	F	138			
					1	F	260			
Bogalusa	Crown Zellerbach Corp.	1	Boxboard, corrugating medium	1350	1	F	150	UBK	1200	
					2	F	121			
		6	Waterproof paper	400	1	F	144	BK	140	
					1	F	196	NSSC	150	
Campti	Western Kraft Corp.	1	Linerboard	300	1	F	288W	K	300	under construction
Deridder	Boise Southern Co.	6	Kraft paper	900	2	F	300	UBK	900	
		1	Linerboard	900				BK	130	
		2	Newsprint	425				GW	350	
Elizabeth	Calkraft Paper Co.	6	Kraft paper	320	2	F	98	UBK	300	
					1	F	155			
Hodge	Continental Can Co.	1,6	Kraft paper, corrugating medium	1550	1	F	370	UBK	1400	S/F
					1	F	226	NSSC	250	
					1	F	220			
					1	F	144			
					1	F	110			
Lockport	Valentine Pulp & Paper Co.	5	Writing paper	125	1	F	130	S	100	S/F
					1	F	98			
Marrero	Celotex Corp.	7	Insulating board	600	1	F	154			
					3	C	149			
New Iberia	Keyes Fibre Co.	6	Molded pulp	n.a.		n.a.				
New Orleans	National Gypsum Co.	7	Wallboard	425	3	W	n.a.			

TABLE A-2-32 (Cont'd.)

State: Louisiana (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

West South Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	Southern Johns-Manville Products Corp.	7	Felts	125	2	C	72	SF	60	
Pineville	Pineville Kraft Corp.	1	Kraft linerboard	800	1	F	256	UBK	800	
Port Hudson	Georgia-Pacific Corp.	–	Market pulp	–	–	–	–	BK	530	
Shreveport	Bird & Sons Inc.	7	Felt	160	1	C	156	SF	60	
					1	C	148			
Slidell	Slidell Felt Mills, Inc.	7	Felt	27	1	C	74			
Springhill	International Paper Co.	1	Container board	1020	1	C	102	K	1000	240 tpd market pulp
					2	F	197			
	Red River Paper Mills, Inc.	4	Bl. kraft board	265	1	F	192			
St. Francisville	Crown-Zellerbach Corp.	6	Kraft papers	510	2	F	151	BK	500	
	St. Francisville Paper Co.	5	Printing papers	500	2	F	240	GW	220	
West Monroe	Olinkraft Inc.	1,6	Kraft paper, corrugating medium	1400	3	F	158	K	1125	
								NSSC	200	
					1	F	232			
					1	F	118			
					1	MF	160			

TABLE A-2-33

State: Oklahoma

PULP AND PAPER MILLS IN THE UNITED STATES

West South Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Ardmore	Big Chief Roofing Co.	7	Felts	50	1	C	74			
Broken Bow	Weyerhaeuser Co.	7	Insulation, wall board	450	1	F	96	SF	450	
					1	F	144			
Pryor	Georgia-Pacific Corp.	7	Gypsum board liner	150	1	C	101	SF	50	S/F
		7	Felt	90	1	C	112			
	National Gypsum Co.	7	Gypsum board liner	200	1	C	101			
Stroud	Allied Materials Corp.	7	Felt	55	1	C	72			
Valliant	Weyerhaeuser Co.	1	Linerboard	1200	1	F	350	UBK	1300	
		1	Corrugating medium	400	1	F	261	NSSC	500	

TABLE A-2-34

State: Texas

PULP AND PAPER MILLS IN THE UNITED STATES

West South Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Dallas	GAF Corp.	7	Felt	66	1	C	75	SF	40	
	TXI Paper Products Inc.	4	Boxboard	270	1	C	118			
					1	MF	108			
Diboll	Temple Industries Inc.	7	Insulation board	n.a.	2	F	161	SF	300	
Evadale	Eastex Inc.	4	Boxboard	1250	1	C	115	BK	1250	
					1	F	196			
					1	F	216			
					1	F	236			
Fort Worth	Southern Johns-Manville Products Corp.	7	Felt	50	1	C	72			
Galena Park	United States Gypsum Co.	7	Gypsum liner-board	150	1	C	103			
Grand Prairie	Corrugated Services Inc.	1	Corrugating medium	n.a.	1	F	n.a.			
Houston	Celotex Corp.	7	Felts	50	1	C	72	SF	25	
	Lloyd A. Fry Roofing Co.	7	Felts	60	1	C	80			
	Southland Paper Mills, Inc.	2	Newsprint	375	2	F	244	UBK	450	
		6	Kraft papers	300	1	MF	300	BK	200	
								GW	300	
Irving	Lloyd A. Fry Roofing Co.	7	Felt	80	1	C	150			
Lufkin	Southland Paper Mills, Inc.	2	Newsprint	1000	2	F	221	K	400	125 tpd market pulp
					1	F	195	GW	800	
					1	F	246			
Orange	Equitable Bag Co., Inc.	6	Kraft bags	85	1	F	57			
					1	F	101			

TABLE A-2-34 (Cont'd.)

State : Texas (Con't)

PULP AND PAPER MILLS IN THE UNITED STATES

West South Central Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
	Owens-Illinois Inc.	1	Kraft linerboard	900	1	F	238	UBK	1000	
Pasadena	Champion International	2,5	Printing papers	620	1	F	120	BK	850	300 tpd market pulp
					1	F	130	GW	80	
					1	F	180			
					1	F	230			
San Antonio	Celotex Corp.	7	Felt	40	1	C	76			
Sherman	McGraw Edison Co.	6	Fiber pipe	35	1	C	60			
					2	C	120			
Texarkana	International Paper Co.	4	Coated board	440	1	F	214	BK	610	170 tpd market pulp

TABLE A-2-35

State: Montana

PULP AND PAPER MILLS IN THE UNITED STATES

Mountain Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Missoula	Hoerner Waldorf Corp.	1	Kraft liner board	1000	2	F	162	UBK	1000	
								BK	150	Market pulp

TABLE A-2-36

State: Idaho

PULP AND PAPER MILLS IN THE UNITED STATES

Mountain Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Lewiston	Potlatch Corp. Consumer Products Div.	3	Tissue	50	1	F	165			
	Pulp & Paperboard Div.	4	Boxboard	700	2	F	196	BK	850	150 tpd market pulp

TABLE A-2-37

State: Colorado

PULP AND PAPER MILLS IN THE UNITED STATES

Mountain Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
Denver	Packaging Corp. of America	4	Linerboard boxboard	100	1	C	96			S/F

TABLE A-2-38

State: New Mexico

PULP AND PAPER MILLS IN THE UNITED STATES

Mountain Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Albuquerque	Allied Materials Corp.	7	Felts	26	1	F	72			

TABLE A-2-39

State: Arizona

PULP AND PAPER MILLS IN THE UNITED STATES

Mountain Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Flagstaff	Ponderosa Paper Products, Inc.	3	Toweling	80	1	F	127	DI	45	
Snowflake	Southwest Forest Industries, Inc.	2	Newsprint	250	1	F	150	UBK	550	S/F
		1	Linerboard	450	1	F	240	BK GW	50 220	

TABLE A-2-40

State: Washington

PULP AND PAPER MILLS IN THE UNITED STATES

Pacific Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
Ana Corte's	Publisher's Forest Products Co. of Wash	7	Hardboard	n.a.		n.a.		SF	60	
	Scott Paper Co.				–	–	–	SO_3	135	Market pulp
Bellingham	Georgia-Pacific Corp.	3	Tissue	200	1	C	66	SO_3	500	350 tpd market pulp
		4	Coated Boards	45	3	F	75	GW	80	
					1	F	93			
					1	F	102			
Camas	Crown Zellerbach Corp.	3,6	Kraft papers	1050	6	F	126	UBK	780	
			tissue		1	F	75	SO_3	420	
					2	F	139			
					1	F	165			
					2	F	105			
					1	F	91			
					1	F	114			
					1	F	176			
Cosmopolis	Weyerhaeuser Co.	–			–	–	–	SO_3	400	Market pulp
Everett	Scott Paper Co.	3	Tissue	450	4	F	195	SO_3	835	400 tpd market pulp
	Simpson Lee Paper Co.	5	Printing & Writing Paper	140	1	F	80	K	140	Paper mill idle
					1	F	96			
					1	F	138			
	Weyerhaeuser Co.				–	–	–	BK	360	Market pulp
								SO_3	300	Market pulp
Hoquiam	Grays Harbor Paper Co.	5	Printing & Writing Papers	286	1	F	180			
					1	F	160			
	ITT Rayonier Inc,				–	–	–	SO_3	475	Market pulp

TABLE A-2-40 (Cont'd.)

State: Washington (continued)

PULP AND PAPER MILLS IN THE UNITED STATES

Pacific Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Longview	Longview Fibre Co.	6	Converting papers	650	2	F	136	UBK	1400	
		1	Linerboard, corrugating medium	1050	2	F	85	BK	400	
					1	F	163	NSSC	300	
					1	F	148			
					2	F	167			
					1	F	187			
					1	F	242			
					1	F	261			
	R-W Paper Co.	6	Glassine	80	2	F	160			
	Weyerhaeuser Co.	1	Corrugating medium	270	1	F	149	BK	650	310 tpd market pulp
		1	Kraft paper board	140	1	F	196	SO_3	400	260 tpd market pulp
		4	Coated boxboard	190	1	F	118	NSSC	275	
		5	Fine papers	120						
Millwood	Inland Empire Paper Co.	2	Newsprint	85	1	F	140	GW	84	
		5	Specialty print. papers	45	2	F	78	SO_3	57	Pulp mill idle
Port Angeles	Crown Zellerbach Corp.	2	Newsprint	400	2	F	154	GW	300	
					1	F	225			
	Fibreboard Corp.	6	Coated boxboard	100	1	C	102	SO_3	65	Paper mill idle
								GW	40	
	ITT Rayonier Inc.	–	Dissolving & paper grade pulp	475	–	–	–	SO_3	475	Market pulp
Port Townsend	Crown Zellerbach Corp.	1	Containerboard	400	1	C	115	K	420	
					1	F	236			
					1	MF	n.a.			

TABLE A-2-40 (Cont'd.)

State: Washington (continued)

PULP AND PAPER MILLS IN THE UNITED STATES

Pacific Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
Shelton	Simpson Timber Co.	7	Insulation Board	120	1	F	102	GW	120	
Steilacoom	Boise Cascade Corp.	2	Newsprint	375	1	F	144	GW	300	
					1	F	136			
					1	F	240			
Sumner	Fibreboard Corp.	1,4	Coated boxboard	60	1	C	84			S/F
Tacoma	Container Corp. of America	1	Liner board	50	1	C	80			S/F
	St. Regis Paper Co.	6	Specialty Indust. Papers	216	1	F	166	UBK	950	300 tpd market pulp
		1	Liner board	440	1	F	242	BK	140	
Vancouver	Boise Cascade Corp	5	Printing Paper	270	1	F	118	DI	150	
					2	F	121			
Wallula	Boise Cascade Corp.	1	Corrugating Medium	240	2	F	150	NSSC	240	
		1	Liner board	460				UBK	460	
Washougal	Fibers Inc.	6	Molded pulp	7	3	Pulp molders				Mill is idle
Wenatchee	Keyes Fibre Co.	6	Specialty Packaging Items	50	6	Pulp molders		GW	35	

TABLE A-2-41

State: Oregon

PULP AND PAPER MILLS IN THE UNITED STATES

Pacific Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Albany	Western Kraft Corp.	1	Container board,	800	1	F	150	UBK	500	
			Corrugating		1	F	154	Semi-chem.	200	
			medium		1	F	164			
Clatskanie	Crown Zellerbach Corp.	2	Newsprint	380	2	F	180	UBK	690	250 tpd market pulp
		3	Tissue	200	1	F	150	GW	270	
		6	Kraft bag	185	1	F	240			
Coos Bay	Coos Head Timber Co.	–		–	–	–	–	SO_3	90	Market pulp (mill idle)
	Georgia-Pacific Corp.	7	Hardboard	n.a.	1	DF	–	GW	n.a.	
Corvallis	Evans Products Co.	7	Hardboard	100	1	F	50	SF	100	
		6	Special indust. paper	10	1	MF		S	6	
	McGraw-Edison Co.	6	Fiber Pipe	n.a.	2	C	102			
Dee	Champion International	7	Hardboard	100	1	F	51	SF	100	
Forest Grove	Forest Fiber Products Co.	7	Hardboard	100	1	F	51	GW	100	
Gardiner	International Paper Co.	1	Container board	600	1	F	241	UBK	600	
Halsey	American Can Co.	3	Tissue	200	2	F	186	BK	300	100 tpd market pulp
Hood River	Fiber Tech. Corp.	7	Hardboard	50	molders					Mill is idle
Klamath Falls	Weyerhaeuser Co.	7	Hardboard	140		n.a.		SF	150	
Lebanon	Champion International	7	Hardboard	150		n.a.				
	Crown Zellerbach Corp.	1	Corrugating	100	1	F	65	SO_3	105	
			medium		1	F	80			

TABLE A-2-41 (Cont'd.)

State: Oregon (continued)

PULP AND PAPER MILLS IN THE UNITED STATES

Pacific Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Newberg	Publishers Paper Co.	2	Newsprint	420	1	F	240	SO_3	200	90 tpd market pulp
					–	–	–	GW	320	
North Bend	Menasha Corp.	1	Corrugating medium	285	1	F	162	NSSC	175	
Oregon City	Publishers Paper Co.	3	Tissue		1	F	122	SO_3	200	
				590	1	F	104	GW	450	
		2	Newsprint		1	F	107			
					1	F	222			
Pilot Rock	United States Gypsum Co.	7	Hardboard	130	1	F	159	SF	130	
Portland	Bird & Son, Inc. of Mass.	7	Felt	28	1	C	44			S/F
	Lloyd A. Fry Roofing Co.	7	Felt	60	1	C	80			
	Herbert Malarkey Roofing Co.	7	Felt	34	1	F	41			
	Molded Container Corp.	6	Molded Pulp	20	2	Pulp molders				
Salem	Boise Cascade Corp.	5	Writing Paper	250	1	F	93	SO_3	275	
					1	F	98			
					2	F	118			
Springfield	Weyerhaeuser Co.	1	Linerboard	1150	1	F	147	UBK	1150	
					1	F	255			
St. Helens	Boise Cascade Corp.	5,6	Kraft papers	500	1	F	156	UBK	70	
					1	F	176	BK	780	
					1	F	186			
	Concel Inc.	3	Tissue	110	1	F	247			

TABLE A-2-41 (Cont'd.)

State: Oregon (continued)

PULP AND PAPER MILLS IN THE UNITED STATES

Pacific Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Toledo	Georgia-Pacific Corp.	1	Bag paper, Linerboard	1035	1	F	245	UBK	1075	S/F
					1	F	246W			
					1	F	160			
West Linn	Crown Zellerbach Corp.	2	Newsprint, book papers		2	F	75	GW	250	S/F
		6	Bl. kraft specialties	530	2	F	140			
		3	Toweling		1	F	94			
					1	F	154			

TABLE A-2-42

State: California

PULP AND PAPER MILLS IN THE UNITED STATES

Pacific Region

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Anderson	Simpson-Lee Paper Co.	5	Printing paper	155	1	F	168	K	150	
Antioch	Crown Zellerbach Corp.	1,6	Kraft paper, corrugating medium	400	2	MF	96			S/F
		3	Tissue	145	1	F	244			
					1	F	94			
	Fibreboard Corp.	1,4	Corrugating medium, boxboard	810	1	F	120	BK	890	S/F
					1	F	144			
					1	F	155	Semi-chem.	450	
		4	Boxboard	90	1	C	91			Mill is idle
Arcata	Crown Simpson Pulp Co.	–			–	–	–	BK	550	Market Pulp
Berkeley	Packaging Co. of Cal.	6	Molded pulp	50	4	Pulp molders				
City of Industry	Sonoco Products Co.	6	Core & tube	60	1	C	82			
Compton	Lloyd A. Fry Roofing Co.	7	Roofing felt	70	1	C	42			
					1	C	72			
Fontana	Fontana Paper Mills, Inc.	7	Dry felt	35	1	F	72			
Fresno	Cellulo Co., Inc.	6	Asbestos filter paper	n.a.	1	F	50			
Fullerton	Kimberly-Clark Corp.	3	Tissue	165	2	F	160			S/F
LaVerne	Northwest Mills Inc.	6	Cellulose wadding	10	1	F	88			
Los Angeles	Celotex Corp.	7	Felt	55	1	C	72			
	Container Corp. of America	1,4	Box-linerboard, corrugating medium	300	1	C	86			S/F
					1	F	158			
	Crown Zellerbach Corp.	3	Tissue, Toweling	80	2	MF	90			
	Federal Paper Board Co. Inc.	4	Boxboard	120	1	C	96			
	Fibreboard Corp.	1,4	Containerboard, Box board	175	1	C	83			S/F
					1	C	104			

TABLE A-2-42 (Cont'd.)

State: California (continued)

PULP AND PAPER MILLS IN THE UNITED STATES

Pacific Region

Identification		Major Categories	Paper Mill		Paper Machines			Pulp Mill		Comments
City	Company		Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	
	Los Angeles Paper Box & Board Mills	4	Box board	70	1	C	65			
Newark	American Forest Products Corp.	1	Corrugating Medium	125	1 1	F F	90 80			
	McGraw Edison Co.	6	Pipe	n.a.		n.a.				
Orange	Potlatch Corp.	3	Tissue	50	1	F	94			
Oxnard	Charmin Paper Products Co.	3	Tissue	220	2	F	n.a.			Mill is idle
Pittsburg	Johns-Manville Products Corp.	7	Roofing felt	110	1 1	C C	80 76	DI	n.a.	
Pomona	Garden State Paper Co., Inc.	2	Newsprint	310	1	F	240	DI	360	S/F
	Northwest Paper Div.	5	Printing papers	260	2 1 1	F F F	144 120 123	DI	25	
	Sierra Tissue Co.	6	Wadding	10	1	C	108			
Port Hueneme	Western Kraft Corp.	1	Corrugating Medium	100	1	C	136W			
Red Bluff	Diamond Int'l. Corp.	6	Molded pulp	n.a.		n.a.		S	n.a.	S/F
Richmond	Certain-Teed Products Corp.	7	Roofing felt	56	1	C	80	SF	30	
	Sonoco Products Co.	6	Tube board	60	1	C	92			
Ripon	Simpson-Lee Paper Co.	5	Printing & Writing papers	90	1	F	120			S/F
Rocklin	Fibreboard Corp.	7	Fibreboard	n.a.		n.a.		n.a.		Under construction
Sacramento	Keyes Fibre Co.	6	Molded pulp	n.a.	13	pulp molders				
Samoa	Louisiana-Pacific Corp.	–		–	–	–	–	BK	600	Market pulp
San Leandro	Kaiser Gypsum Co., Inc.	1,4	Chip-liner-box board	120	1	C	116			
Santa Ana	B.J. Fibres Inc.	–			–	–	–	DI	100	Market pulp

TABLE A-2-42 (Cont'd.)

PULP AND PAPER MILLS IN THE UNITED STATES

State: California (continued)

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Santa Clara	Container Corp. of America	4	Boxboard	185	1	C	134			
	Georgia-Pacific Corp.	1	Corrugating Medium	130	1	C	88			
					1	F	87			
Santa Cruz	Lass Pulp Molding Corp.	6	Molded pulp	3	2	Pulp Molders				
Santa Fe Springs	Specialty Paper Mills Inc.	1	Corrugating Medium, Linerboard	75	1	F	60			
					1	F	78			
South Gate	Anchor Paper Mills Inc.	7	Roofing Felt	30	1	C	54	Rags	30	
	U.S. Gypsum Co.	7	Felt	70	1	C	80			
		4	Newsboard, Chipboard	200	1	C	156			
Stockton	Fiberboard Corp.	1,4	Boxboard, Linerboard	280	1	C-MF	112			S/F
					1	C	112			
Ukiah	Masonite Corp.	7	Hardboard	n.a.	1	F	60	XW	n.a.	
					1	F	192			
Vernon	The Flintkote Co.	4,7	Boxboard, Wallboard	225	1	C	116	SF	35	S/F
					2	C	112			
			Felt	115						

TABLE A-2-43

PULP AND PAPER MILLS IN THE UNITED STATES

State: Alaska

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Ketchikan	Ketchikan Pulp Co.	–	Dissolving pulp	–	–	–	–	SO_3	640	Market pulp
Sitka	Alaska Lumber & Pulp Co.	–	Dissolving pulp	–	–	–	–	SO_3	600	Market pulp

TABLE A-2-44

Puerto Rico

PULP AND PAPER MILLS IN THE UNITED STATES

Identification			Paper Mill		Paper Machines			Pulp Mill		
City	Company	Major Categories	Product	Capacity (tpd)	No.	Type	Trim (in.)	Type	Capacity (tpd)	Comments
Arecibo	Pan American Paper Mill Inc.	1	Corrugating medium	170	1	F/C	140	Bagasse	100	
Barceloneta	Vanity Fair Paper Corp. of Puerto Rico	3	Tissue	25	1	F	94			Mill is idle

APPENDIX A-3

SUMMARY: NUMBER OF MILLS BY FUNCTIONAL GROUP AND GEOGRAPHIC REGION

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Construction Paper and Paperboard	A-3-7	A-148

TABLE A-3-1

SUMMARY: NUMBER OF MILLS BY FUNCTIONAL GROUP AND GEOGRAPHIC REGION

Functional Group: Containerboard

Region, State	Total	Make Containerboard Only	Make Containerboard Plus Others
UNITED STATES	152	110	42
NEW ENGLAND	11	7	4
Maine	1	1	0
New Hampshire	4	2	2
Vermont	0	0	0
Massachusetts	3	1	2
Rhode Island	0	0	0
Connecticut	3	3	0
MIDDLE ATLANTIC	19	15	4
New York	8	6	2
New Jersey	3	3	0
Pennsylvania	8	6	2
EAST NORTH CENTRAL	35	29	6
Ohio	15	12	3
Indiana	5	5	0
Illinois	3	2	1
Michigan	7	6	1
Wisconsin	5	4	1
WEST NORTH CENTRAL	4	3	1
Minnesota	1	0	1
Iowa	1	1	0
Missouri	0	0	0
North Dakota	0	0	0
South Dakota	0	0	0
Nebraska	0	0	0
Kansas	2	2	0
SOUTH ATLANTIC	34	26	8
Delaware	1	1	0
Maryland	1	1	0
District of Columbia	0	0	0
Virginia	6	4	2
West Virginia	2	2	0
North Carolina	4	4	0
South Carolina	4	3	1
Georgia	10	7	3
Florida	6	4	2

TABLE A-3-1 (Continued)

Functional Group: Containerboard

Region, State	Total	Make Containerboard Only	Make Containerboard Plus Others
EAST SOUTH CENTRAL	12	11	1
Kentucky	1	1	0
Tennessee	4	4	0
Alabama	6	6	0
Mississippi	1	0	1
WEST SOUTH CENTRAL	13	9	4
Arkansas	1	1	0
Louisiana	8	4	4
Oklahoma	1	1	0
Texas	3	3	0
MOUNTAIN	3	1	2
Montana	1	1	0
Idaho	0	0	0
Wyoming	0	0	0
Colorado	1	0	1
Utah	0	0	0
New Mexico	0	0	0
Arizona	1	0	1
Nevada	0	0	0
PACIFIC	21	10	12
Washington	9	3	6
Oregon	6	4	2
California	6	2	4
Puerto Rico	1	1	0

TABLE A-3-2

SUMMARY: NUMBER OF MILLS BY FUNCTIONAL GROUP AND GEOGRAPHIC REGION

Functional Group: Groundwood

Region, State	Total	Make GW Paper Only	Make GW Paper Plus Others
UNITED STATES	34	26	8
NEW ENGLAND	9	6	3
Maine	8	5	3
New Hampshire	0	0	0
Vermont	1	1	0
Massachusetts	0	0	0
Rhode Island	0	0	0
Connecticut	0	0	0
MIDDLE ATLANTIC	3	3	0
New York	2	2	0
New Jersey	1	1	0
Pennsylvania	0	0	0
EAST NORTH CENTRAL	3	3	0
Ohio	0	0	0
Indiana	0	0	0
Illinois	1	1	0
Michigan	1	1	0
Wisconsin	1	1	0
WEST NORTH CENTRAL	3	3	0
Minnesota	3	3	0
Iowa	0	0	0
Missouri	0	0	0
North Dakota	0	0	0
South Dakota	0	0	0
Nebraska	0	0	0
Kansas	0	0	0
SOUTH ATLANTIC	2	2	0
Delaware	0	0	0
Maryland	0	0	0
District of Columbia	0	0	0
Virginia	0	0	0
West Virginia	0	0	0
North Carolina	0	0	0
South Carolina	1	1	0
Georgia	1	1	0
Florida	0	0	0

TABLE A-3-2 (Continued)

Functional Group: Groundwood

Region, State	Total	Make GS Paper Only	Make GW Paper Plus Others
EAST SOUTH CENTRAL	2	2	0
Kentucky	0	0	0
Tennessee	1	1	0
Alabama	1	1	0
Mississippi	0	0	0
WEST SOUTH CENTRAL	4	3	1
Arkansas	1	1	0
Louisiana	1	0	1
Oklahoma	0	0	0
Texas	2	2	0
MOUNTAIN	1	0	1
Montana	0	0	0
Idaho	0	0	0
Wyoming	0	0	0
Colorado	0	0	0
Utah	0	0	0
New Mexico	0	0	0
Arizona	1	0	1
Nevada	0	0	0
PACIFIC	7	4	3
Washington	3	2	1
Oregon	3	1	2
California	1	1	0

TABLE A-3-3

SUMMARY: NUMBER OF MILLS BY FUNCTIONAL GROUP AND GEOGRAPHIC REGION

Functional Group: Tissue and Other Machine Creped Paper

Region, State	Total	Make Tissue Only	Make Tissue Plus Others
UNITED STATES	89	76	13
NEW ENGLAND	22	19	3
Maine	5	4	1
New Hampshire	7	5	2
Vermont	4	4	0
Massachusetts	4	4	0
Rhode Island	0	0	0
Connecticut	2	2	0
MIDDLE ATLANTIC	25	25	0
New York	12	12	0
New Jersey	3	3	0
Pennsylvania	10	10	0
EAST NORTH CENTRAL	14	13	1
Ohio	1	1	0
Indiana	0	0	0
Illinois	1	1	0
Michigan	1	1	0
Wisconsin	11	10	1
WEST NORTH CENTRAL	0	0	0
Minnesota	0	0	0
Iowa	0	0	0
Missouri	0	0	0
North Dakota	0	0	0
South Dakota	0	0	0
Nebraska	0	0	0
Kansas	0	0	0
SOUTH ATLANTIC	7	6	1
Delaware	0	0	0
Maryland	1	1	0
District of Columbia	0	0	0
Virginia	0	0	0
West Virginia	0	0	0
North Carolina	3	3	0
South Carolina	1	1	0
Georgia	1	1	0
Florida	1	0	1

TABLE A-3-3 (Continued)

Functional Group: Tissue and Other Machine Creped Paper

Region, State	Total	Make Tissue Only	Make Tissue Plus Others
EAST SOUTH CENTRAL	3	1	2
Kentucky	0	0	0
Tennessee	1	1	0
Alabama	2	0	2
Mississippi	0	0	0
WEST SOUTH CENTRAL	1	1	0
Arkansas	1	1	0
Louisiana	0	0	0
Oklahoma	0	0	0
Texas	0	0	0
MOUNTAIN	2	2	0
Montana	0	0	0
Idaho	1	1	0
Wyoming	0	0	0
Colorado	0	0	0
Utah	0	0	0
New Mexico	0	0	0
Arizona	1	1	0
Nevada	0	0	0
PACIFIC	14	8	6
Washington	3	1	2
Oregon	4	2	2
California	7	5	2
Puerto Rico	1	1	0

TABLE A-3-4

SUMMARY: NUMBER OF MILLS BY FUNCTIONAL GROUP AND GEOGRAPHIC REGION

Functional Group: Folding Boxboard

Region, State	Total	Make Boxboard Only	Make Boxboard Plus Others
UNITED STATES	95	63	32
NEW ENGLAND	12	12	0
Maine	0	0	0
New Hampshire	0	0	0
Vermont	0	0	0
Massachusetts	5	5	0
Rhode Island	0	0	0
Connecticut	7	7	0
MIDDLE ATLANTIC	20	17	3
New York	6	5	1
New Jersey	8	6	2
Pennsylvania	6	6	0
EAST NORTH CENTRAL	22	14	8
Ohio	6	3	3
Indiana	1	1	0
Illinois	5	4	1
Michigan	8	5	3
Wisconsin	2	1	1
WEST NORTH CENTRAL	1	1	0
Minnesota	0	0	0
Iowa	1	1	0
Missouri	0	0	0
North Dakota	0	0	0
South Dakota	0	0	0
Nebraska	0	0	0
Kansas	0	0	0
SOUTH ATLANTIC	18	9	9
Delaware	0	0	0
Maryland	2	2	0
District of Columbia	0	0	0
Virginia	4	1	3
West Virginia	0	0	0
North Carolina	3	2	1
South Carolina	2	1	1
Georgia	4	2	2
Florida	3	1	2

TABLE A-3-5

SUMMARY: NUMBER OF MILLS BY FUNCTIONAL GROUP AND GEOGRAPHIC REGION

Functional Group: Printing, Writing & Related

Region, State	Total	Make P,W & R Only	Make P,W & R Plus Others
UNITED STATES	124	115	9
NEW ENGLAND	31	27	4
Maine	6	5	1
New Hampshire	4	1	3
Vermont	1	1	0
Massachusetts	20	20	0
Rhode Island	0	0	0
Connecticut	0	0	0
MIDDLE ATLANTIC	25	25	0
New York	16	16	0
New Jersey	2	2	0
Pennsylvania	7	7	0
EAST NORTH CENTRAL	41	39	2
Ohio	7	7	0
Indiana	1	1	0
Illinois	1	1	0
Michigan	13	11	2
Wisconsin	19	19	0
WEST NORTH CENTRAL	3	2	1
Minnesota	3	2	1
Iowa	0	0	0
Missouri	0	0	0
North Dakota	0	0	0
South Dakota	0	0	0
Nebraska	0	0	0
Kansas	0	0	0
SOUTH ATLANTIC	6	6	0
Delaware	0	0	0
Maryland	1	1	0
District of Columbia	0	0	0
Virginia	2	2	0
West Virginia	0	0	0
North Carolina	2	2	0
South Carolina	1	1	0
Georgia	0	0	0
Florida	0	0	0

TABLE A-3-5 (Continued)

Functional Group: Printing, Writing & Related

Region, State	Total	Make P,W & R Only	Make P,W & R Plus Others
EAST SOUTH CENTRAL	5	3	2
Kentucky	1	1	0
Tennessee	1	1	0
Alabama	3	1	2
Mississippi	0	0	0
WEST SOUTH CENTRAL	4	4	0
Arkansas	1	1	0
Louisiana	2	2	0
Oklahoma	0	0	0
Texas	1	1	0
MOUNTAIN	0	0	0
Montana	0	0	0
Idaho	0	0	0
Wyoming	0	0	0
Colorado	0	0	0
Utah	0	0	0
New Mexico	0	0	0
Arizona	0	0	0
Nevada	0	0	0
PACIFIC	9	9	0
Washington	5	5	0
Oregon	1	1	0
California	3	3	0

TABLE A-3-6

SUMMARY: NUMBER OF MILLS BY FUNCTIONAL GROUP AND GEOGRAPHIC REGION

Functional Group: Industrial Packaging, Converting, & Miscellaneous

Region, State	Total	Make IP, C&M Only	Make IP, C&M Plus Others
UNITED STATES	146	120	26
NEW ENGLAND	33	29	4
Maine	4	3	1
New Hampshire	11	10	1
Vermont	2	2	0
Massachusetts	14	12	2
Rhode Island	0	0	0
Connecticut	2	2	0
MIDDLE ATLANTIC	29	28	1
New York	12	11	1
New Jersey	8	8	0
Pennsylvania	9	9	0
EAST NORTH CENTRAL	29	26	3
Ohio	8	8	0
Indiana	3	3	0
Illinois	2	2	0
Michigan	5	2	3
Wisconsin	11	11	0
WEST NORTH CENTRAL	2	2	0
Minnesota	1	1	0
Iowa	0	0	0
Missouri	1	1	0
North Dakota	0	0	0
South Dakota	0	0	0
Nebraska	0	0	0
Kansas	0	0	0
SOUTH ATLANTIC	18	11	7
Delaware	3	2	1
Maryland	1	1	0
District of Columbia	0	0	0
Virginia	4	3	1
West Virginia	1	1	0
North Carolina	3	2	1
South Carolina	0	0	0
Georgia	4	2	2
Florida	2	0	2

TABLE A-3-6 (Continued)

Functional Group: Industrial Packaging, Converting, & Miscellaneous

Region, State	Total	Make IP, C&M Only	Make IP, C&M Plus Others
EAST SOUTH CENTRAL	9	6	3
Kentucky	1	1	0
Tennessee	4	3	1
Alabama	2	1	1
Mississippi	2	1	1
WEST SOUTH CENTRAL	10	8	2
Arkansas	3	3	0
Louisiana	4	3	1
Oklahoma	0	0	0
Texas	3	2	1
MOUNTAIN	1	0	1
Montana	0	0	0
Idaho	0	0	0
Wyoming	0	0	0
Colorado	0	0	0
Utah	0	0	0
New Mexico	0	0	0
Arizona	1	0	1
Nevada	0	0	0
PACIFIC	15	10	5
Washington	6	4	2
Oregon	5	2	3
California	4	4	0

TABLE A-3-7

SUMMARY: NUMBER OF MILLS BY FUNCTIONAL GROUP AND GEOGRAPHIC REGION

Functional Group: Construction Paper & Paperboard

Region, State	Total	Make Const. Paper Only	Make Const. Paper Plus Others
UNITED STATES	149	147	2
NEW ENGLAND	12	12	0
Maine	1	1	0
New Hampshire	0	0	0
Vermont	2	2	0
Massachusetts	4	4	0
Rhode Island	1	1	0
Connecticut	4	4	0
MIDDLE ATLANTIC	29	29	0
New York	8	8	0
New Jersey	11	11	0
Pennsylvania	10	10	0
EAST NORTH CENTRAL	25	25	0
Ohio	5	5	0
Indiana	2	2	0
Illinois	11	11	0
Michigan	4	4	0
Wisconsin	3	3	0
WEST NORTH CENTRAL	12	12	0
Minnesota	4	4	0
Iowa	1	1	0
Missouri	6	6	0
North Dakota	0	0	0
South Dakota	0	0	0
Nebraska	0	0	0
Kansas	1	1	0
SOUTH ATLANTIC	18	18	0
Delaware	0	0	0
Maryland	1	1	0
District of Columbia	0	0	0
Virginia	3	3	0
West Virginia	0	0	0
North Carolina	5	5	0
South Carolina	1	1	0
Georgia	3	3	0
Florida	5	5	0

TABLE A-3-7 (Continued)

Functional Group: Construction Paper & Paperboard

Region, State	Total	Make Const. Paper Only	Make Const. Paper Plus Others
EAST SOUTH CENTRAL	11	11	0
Kentucky	0	0	0
Tennessee	4	4	0
Alabama	2	2	0
Mississippi	5	5	0
WEST SOUTH CENTRAL	21	20	1
Arkansas	2	2	0
Louisiana	5	5	0
Oklahoma	6	6	0
Texas	8	7	1
MOUNTAIN	1	1	0
Montana	0	0	0
Idaho	0	0	0
Wyoming	0	0	0
Colorado	0	0	0
Utah	0	0	0
New Mexico	1	1	0
Arizona	0	0	0
Nevada	0	0	0
PACIFIC	20	19	1
Washington	2	2	0
Oregon	11	10	1
California	7	7	0

APPENDIX B – SUPPORTING DATA FOR PULPWOOD

APPENDIX B-1

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APPENDIX B-2

SUPPORTING DATA ON TIMBER AVAILABILITY

Data in the following tables is reproduced from "The Outlook for Timber in the United States," Forest Service, U.S. Department of Agriculture, Forest Resource Report No. 20, Oct. 1973:

Historical and Projected Areas of Commercial Timberland, by Region . . . . Table B-2-1

Historical and Projected Supplies of Roundwood Products:
  North . . . . Table B-2-2
  South . . . . Table B-2-3
  Rocky Mountains . . . . . Table B-2-4
  Pacific Coast Section . . Table B-2-5

Net Volume of Timber on Commercial Timberland in the United States, January 1970 . Table B-2-6

Net Annual Growth and Removals of Growing Stock on Commercial Timberland in the United States, 1970 . . . . Table B-2-7

TABLE B-2-1

HISTORICAL AND PROJECTED AREAS OF COMMERCIAL TIMBERLAND, BY REGION
(000 acres)

Region	1952	1962	1970	Change 1962-1970
New England	30, 935	31, 878	32, 367	+488
Middle Atlantic	42, 098	46, 737	49, 685	+2, 947
Lake States	52, 604	51, 530	50, 841	−690
Central	44, 559	44, 942	45, 008	+66
Total North	170, 198	175, 089	177, 901	+2, 812
South Atlantic	46, 962	47, 911	48, 463	+551
East Gulf	42, 104	43, 128	41, 334	−1, 794
Central Gulf	49, 497	53, 361	51, 454	−1, 907
West Gulf	53, 518	55, 504	51, 291	−4, 214
Total South	192, 082	199, 905	192, 542	−7, 364
Pacific Northwest	50, 589	50, 407	49, 713	−694
Pacific Southwest	18, 216	18, 132	17, 909	−223
Northern Rocky Mountain	38, 337	38, 792	36, 669	−2, 124
Southern Rocky Mountain	25, 554	25, 810	24, 963	−848
Total West	132, 696	133, 141	129, 254	−3, 888
All regions	494, 978	508, 137	499, 697	−8,440

Note: Data for 1952 and 1962 as published in early reports have been revised to insure comparability with 1970 definitions and local specifications of commercial timberland.

TABLE B-2-2

HISTORICAL AND PROJECTED SUPPLIES OF ROUNDWOOD PRODUCTS IN THE NORTH
(million cubic feet)

Owner class and species group	1952	1962	1970	Projections			
				1980	1990	2000	2020
National Forests:							
Softwoods	22	26	30	57	81	104	102
Hardwoods	34	44	45	98	126	160	158
Total	56	70	75	155	207	264	260
Other public:							
Softwoods	39	41	50	92	130	168	165
Hardwoods	72	87	94	227	318	411	406
Total	111	128	144	319	448	579	571
Forest industry:							
Softwoods	138	123	168	213	260	324	344
Hardwoods	132	118	148	187	228	278	296
Total	270	241	316	400	488	602	640
Farm and miscellaneous private:							
Softwoods	404	324	332	441	471	514	502
Hardwoods	1, 140	1, 048	1, 122	1, 917	2, 493	2, 996	2, 939
Total	1, 545	1, 372	1, 454	2, 358	2, 964	3, 510	3, 441
Total North:							
Softwoods	603	513	579	803	942	1, 109	1, 113
Hardwoods	1, 379	1, 299	1, 410	2, 428	3, 165	3, 845	3, 799
Total	1, 982	1, 812	1, 989	3, 231	4, 107	4, 954	4912

TABLE B-2-3

HISTORICAL AND PROJECTED SUPPLIES OF ROUNDWOOD PRODUCTS IN THE SOUTH

(million cubic feet)

Owner class and species group	1952	1962	1970	Projections			
				1980	1990	2000	2020
National Forest:							
Softwoods	61	117	103	208	307	404	403
Hardwoods	17	21	24	76	120	165	169
Total	78	138	127	284	427	569	572
Other public:							
Softwoods	92	73	87	127	167	202	201
Hardwoods	46	32	42	80	101	119	123
Total	138	105	129	207	268	321	324
Forest industry:							
Softwoods	829	595	980	1, 194	1, 386	1, 581	1, 659
Hardwoods	334	454	327	385	441	493	533
Total	1, 163	1, 049	1, 307	1, 579	1, 827	2, 074	2, 192
Farm and miscellaneous private:							
Softwoods	2, 066	1, 892	2, 575	3, 093	3, 358	3, 581	3, 525
Hardwoods	1, 538	1, 100	1, 275	2, 110	2, 346	2, 550	2, 591
Total	3, 604	2, 992	3, 850	5, 203	5, 704	6, 131	6, 116
Total South:							
Softwoods	3, 048	2, 677	3, 745	4, 622	5, 217	5, 768	5, 788
Hardwoods	1, 935	1, 606	1, 668	2, 651	3, 009	3, 327	3. 416
Total	4, 983	4, 283	5, 413	7, 273	8, 226	9, 095	9, 204

TABLE B-2-4

HISTORICAL AND PROJECTED SUPPLIES OF ROUNDWOOD PRODUCTS IN THE ROCKY MOUNTAINS

(million cubic feet)

Owner class and species group	1952	1962	1970	Projections			
				1980	1990	2000	2020
National Forests:							
Softwoods	218	387	519	702	697	692	685
Hardwoods	7	10	9	23	28	32	38
Total	225	397	528	725	725	724	723
Other public:							
Softwoods	72	78	78	82	120	177	174
Hardwoods	1	2	(1)	4	7	10	10
Total	74	80	78	86	127	187	184
Forest industry							
Softwoods	90	118	170	146	127	100	102
Hardwoods	(1)	1	(1)	6	6	5	5
Total	91	119	170	152	133	105	107
Farm and miscellaneous private:							
Softwoods	116	101	86	113	196	306	270
Hardwoods	2	2	1	12	24	41	36
Total	118	103	87	125	220	347	306
Total Rocky Mountains:							
Softwoods	495	684	852	1, 044	1, 139	1, 275	1, 231
Hardwoods	11	14	11	46	65	89	89
Total	506	698	863	1, 090	1, 204	1, 364	1, 320

[1] Value is less than 0.5 million cubic feet.

TABLE B-2-5

HISTORICAL AND PROJECTED SUPPLIES OF ROUNDWOOD PRODUCTS IN THE PACIFIC COAST SECTION

(million cubic feet)

Owner class and species group	1952	1962	1970	Projections			
				1980	1990	2000	2020
National Forest:							
Softwoods	537	1,076	1,274	1,341	1,342	1,348	1,361
Hardwoods	2	4	12	13	13	13	13
Total	539	1,080	1,286	1,354	1,355	1,361	1,374
Other public:							
Softwoods	199	355	471	510	525	542	602
Hardwoods	6	4	12	8	8	8	8
Total	205	359	483	518	533	550	610
Forest industry:							
Softwoods	1,644	1,400	1,601	1,207	862	801	888
Hardwoods	19	25	36	40	51	59	68
Total	1,663	1,425	1,637	1,247	913	860	956
Farm and miscellaneous private:							
Softwoods	859	492	459	583	646	641	639
Hardwoods	8	29	25	22	24	24	26
Total	867	521	484	605	670	665	665
All owners:							
Softwoods	3,239	3,324	3,805	3,642	3,376	3,332	3,491
Hardwoods	35	62	85	82	96	105	114
Total	3,274	3,386	3,890	3,724	3,472	3,437	3,605

TABLE B-2-6

NET VOLUME OF TIMBER ON COMMERCIAL TIMBERLAND IN THE UNITED STATES, JANUARY 1970

(million cubic feet)

Section, region, and State	Total, all timber			Growing-stock trees								
				Total			Sawtimber trees			Poletimber trees		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
New England:												
Connecticut	2,294	278	2,015	1,898	228	1,670	766	121	644	1,132	106	1,026
Maine	24,061	16,125	7,936	21,253	14,763	6,490	9,059	6,356	2,702	12,193	8,406	3,787
Massachusetts	3,408	883	2,524	2,716	769	1,946	985	429	556	1,731	340	1,390
New Hampshire	5,942	3,287	2,655	5,147	2,901	2,245	2,481	1,758	722	2,665	1,143	1,522
Rhode Island	350	27	322	266	19	246	61	10	51	204	9	195
Vermont	4,413	1,636	2,777	3,928	1,507	2,420	1,790	787	1,002	2,138	720	1,418
Total	40,471	22,239	18,232	35,210	20,190	15,019	15,144	9,464	5,680	20,065	10,726	9,339
Middle Atlantic:												
Delaware	698	237	461	657	229	428	342	134	207	315	96	220
Maryland	3,277	540	2,737	3,074	531	2,543	1,807	373	1,433	1,268	157	1,109
New Jersey	1,839	396	1,442	1,729	385	1,343	1,051	219	832	678	166	511
New York	15,135	3,822	11,312	12,517	3,291	9,226	6,220	1,875	4,344	6,296	1,415	4,881
Pennsylvania	22,702	1,794	20,908	20,270	1,600	18,670	9,128	900	8,226	11,143	700	10,443
West Virginia	15,290	680	14,609	14,085	657	13,428	8,368	422	7,946	5,717	235	5,482
Total	58,944	7,471	51,472	52,333	6,694	45,639	26,916	3,925	22,991	25,417	2,769	22,648
Lake States:												
Michigan	17,909	4,490	13,419	16,558	4,313	12,245	7,415	2,103	5,312	9,142	2,209	6,933
Minnesota	12,387	3,988	8,399	11,726	3,896	7,830	3,635	1,607	2,028	8,091	2,289	5,802
North Dakota	382	0	382	276	0	276	117	0	117	158	0	158
South Dakota (East)	131	19	111	102	18	83	64	10	54	37	8	29
Wisconsin	12,188	2,747	9,441	11,411	2,662	8,748	4,547	1,349	3,197	6,863	1,313	5,550
Total	43,000	11,245	31,754	40,075	10,891	29,184	15,780	5,071	10,709	24,294	5,820	18,474
Central:												
Illinois	2,395	19	2,375	2,327	19	2,308	1,391	5	1,386	936	14	922
Indiana	4,020	74	3,946	3,606	70	3,536	2,448	34	2,413	1,158	35	1,123
Iowa	2,180	3	2,176	1,807	3	1,803	1,358	2	1,356	449	1	447
Kansas	899	1	897	534	0	533	387	0	387	147	0	146
Kentucky	8,863	642	8,221	8,546	621	7,925	5,295	412	4,883	3,251	209	3,041
Missouri	8,083	405	7,678	6,495	384	6,111	2,746	218	2,528	3,749	166	3,583
Nebraska	651	126	525	506	114	391	390	88	302	115	26	89
Ohio	4,916	133	4,782	4,232	123	4,109	2,678	67	2,611	1,554	56	1,497
Total	32,009	1,405	30,604	28,057	1,338	26,719	16,696	828	15,867	11,361	509	10,852
Total, North	174,425	42,362	132,063	155,677	39,114	116,563	74,537	19,288	55,248	81,139	19,825	61,314
South Atlantic:												
North Carolina	22,222	8,743	13,479	19,680	8,509	11,171	13,156	6,331	6,824	6,524	2,177	4,346
South Carolina	14,958	6,614	8,344	12,699	6,369	6,330	9,198	4,813	4,384	3,501	1,555	1,945
Virginia	18,797	4,548	14,248	15,171	4,215	10,955	9,604	2,847	6,757	5,566	1,368	4,198
Total	55,979	19,906	36,072	47,550	19,093	28,456	31,958	13,992	17,966	15,592	5,101	10,490
East Gulf:												
Florida	12,565	7,099	5,465	10,888	6,904	3,984	6,930	4,407	2,523	3,958	2,497	1,461
Georgia	21,355	12,139	9,216	19,695	11,839	7,856	11,964	7,716	4,248	7,730	4,123	3,606
Total	33,921	19,239	14,681	30,583	18,743	11,839	18,895	12,123	6,771	11,688	6,620	5,067
Central Gulf:												
Alabama	17,890	9,400	8,490	16,009	9,232	6,777	10,845	6,921	3,923	5,164	2,311	2,853
Mississippi	15,969	7,280	8,688	13,878	7,188	6,689	8,821	5,252	3,569	5,056	1,936	3,120
Tennessee	12,139	1,870	10,268	10,395	1,799	8,596	5,904	1,038	4,866	4,491	761	3,729
Total	45,999	18,550	27,448	40,283	18,220	22,062	25,571	13,212	12,359	14,712	5,008	9,703
West Gulf:												
Arkansas	17,848	6,630	11,217	15,365	6,539	8,826	9,764	4,970	4,793	5,601	1,568	4,032
Louisiana	16,279	7,781	8,497	13,602	7,595	6,006	10,424	6,263	4,161	3,177	1,332	1,845
Oklahoma	2,415	861	1,554	1,648	850	798	944	584	360	704	266	438
Texas	12,093	7,412	4,680	10,482	7,361	3,121	7,488	5,823	1,665	2,994	1,538	1,456
Total	48,636	22,686	25,950	41,099	22,346	18,753	28,621	17,641	10,980	12,477	4,705	7,772
Total, South	184,535	80,383	104,152	159,517	78,404	81,112	105,046	56,968	48,078	54,470	21,436	33,034

See footnotes at end of table.

TABLE B-2-6 (Cont'd.)

NET VOLUME OF TIMBER ON COMMERCIAL TIMBERLAND IN THE UNITED STATES, JANUARY 1970

(million cubic feet)

Section, region, and State	Total, all timber			Growing-stock trees								
				Total			Sawtimber trees			Poletimber trees		
	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods	All species	Soft-woods	Hard-woods
Pacific Northwest:												
Alaska: Coastal	35,972	35,668	304	34,767	34,468	298	32,527	32,294	233	2,239	2,174	65
Oregon:												
Western	65,898	59,133	6,765	62,817	56,823	5,994	55,073	51,455	3,618	7,744	5,368	2,376
Eastern	24,905	24,845	60	24,276	24,238	38	18,441	18,431	10	5,835	5,807	28
Summary	90,803	83,978	6,825	87,093	81,061	6,032	73,514	69,886	3,628	13,579	11,175	2,404
Washington:												
Western	50,023	44,693	5,330	47,323	42,336	4,987	39,675	36,925	2,750	7,648	5,411	2,237
Eastern	18,363	18,119	244	17,792	17,621	171	12,963	12,883	80	4,829	4,738	91
Summary	68,386	62,812	5,574	65,115	59,957	5,158	52,638	49,808	2,830	12,477	10,149	2,328
Total	195,161	182,458	12,703	186,975	175,486	11,488	158,679	151,988	6,691	28,295	23,498	4,797
Pacific Southwest:												
California	55,716	52,128	3,588	54,251	51,152	3,099	48,452	46,138	2,314	5,799	5,014	785
Hawaii	470	5	464	238	4	234	194	3	190	44	0	44
Total	56,186	52,133	4,052	54,489	51,156	3,333	48,646	46,141	2,504	5,843	5,014	829
Total, Pacific Coast	251,347	234,591	16,756	241,465	226,643	14,822	207,326	198,130	9,195	34,139	28,512	5,627
Northern Rocky Mountain:												
Idaho [2]	31,563	31,234	329	29,497	29,257	239	24,020	23,897	122	5,477	5,360	117
Montana [2]	33,181	32,851	330	28,650	28,376	273	19,677	19,465	211	8,972	8,910	62
South Dakota (West) [2]	1,060	1,052	7	1,007	1,001	6	695	693	1	311	307	4
Wyoming [2]	5,412	5,161	251	4,673	4,471	201	3,173	3,123	50	1,499	1,347	151
Total	71,218	70,309	908	63,827	63,106	721	47,566	47,181	385	16,261	15,925	336
Southern Rocky Mountain:												
Arizona [2]	5,218	4,861	356	4,809	4,583	226	4,323	4,190	132	486	393	93
Colorado [2]	14,942	12,060	2,882	12,267	10,360	1,907	8,083	7,392	691	4,183	2,968	1,215
Nevada [2]	278	254	24	250	237	12	232	227	5	17	10	7
New Mexico [2]	7,183	6,324	858	6,336	5,735	600	5,158	4,869	289	1,178	846	331
Utah [2]	5,397	4,021	1,375	4,727	3,699	1,028	3,100	2,765	335	1,627	923	703
Total	33,019	27,521	5,497	28,391	24,605	3,785	20,898	19,464	1,434	7,492	5,141	2,351
Total, Rocky Mountain	104,237	97,830	6,406	92,218	87,711	4,507	68,464	66,645	1,819	23,753	21,066	2,667
Total, all regions	714,545	455,168	259,377	648,879	431,873	217,005	455,373	341,033	114,341	193,503	90,840	102,663

1. Data may not add to totals because of truncating. Zeros indicate no data or negligible amounts.

2. Estimates of area subclasses do not include 5.0 million acres of National Forest lands in the Rocky Mountain States that are not included in the base for allowable cut because of such factors as unstable soils, small size of isolated patches and stringers, or special use constraints. Volume and growth data are also excluded for these areas.

TABLE B-2-7

NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL TIMBERLAND IN THE UNITED STATES, 1970

(000 cubic feet)

Section, region, and State	All species		Softwoods		Hardwoods	
	Growth	Removals	Growth	Removals	Growth	Removals
New England:						
Connecticut	45,362	8,558	6,110	1,310	39,252	7,243
Maine	710,800	408,700	550,000	275,200	160,800	133,500
Massachusetts	80,999	31,329	22,585	14,709	58,414	16,620
New Hampshire	138,136	60,400	85,818	24,635	52,318	35,855
Rhode Island	9,786	2,376	880	403	8,906	1,963
Vermont	92,850	50,995	45,416	22,043	47,434	28,952
Total	1,077,905	562,443	710,818	338,390	367,087	224,053
Middle Atlantic:						
Delaware	30,980	11,858	8,076	8,337	22,903	3,521
Maryland	106,499	75,572	16,576	30,774	89,923	44,798
New Jersey	56,911	12,301	16,082	5,501	40,829	6,800
New York	285,857	114,904	80,247	21,983	205,610	92,921
Pennsylvania	762,820	231,755	44,375	16,443	718,445	215,312
West Virginia	553,665	155,216	25,542	12,646	528,123	142,570
Total	1,796,711	601,606	190,898	95,684	1,605,813	505,922
Lake States:						
Michigan	605,111	213,078	176,878	54,770	428,233	158,308
Minnesota	455,635	155,198	114,881	70,227	340,754	84,971
North Dakota	4,973	3,136	0	0	4,973	3,136
South Dakota (East)	4,158	1,889	928	409	3,230	1,480
Wisconsin	503,637	308,963	133,039	39,185	370,598	269,778
Total	1,573,514	682,254	425,726	164,591	1,147,788	517,663
Central:						
Illinois	92,502	91,096	1,388	1,009	91,114	90,087
Indiana	106,525	65,692	3,895	484	102,630	65,208
Iowa	81,181	80,405	230	318	80,951	80,087
Kansas	16,002	7,616	23	20	15,979	7,596
Kentucky	319,214	141,254	21,222	11,067	297,992	130,187
Missouri	302,683	108,835	24,096	14,086	278,587	94,749
Nebraska	16,718	10,156	3,831	1,256	12,887	8,900
Ohio	157,646	113,120	5,015	1,883	152,631	111,237
Total	1,092,471	618,174	59,691	30,123	1,032,780	588,051
Total, North	5,540,601	2,464,477	1,387,133	628,788	4,153,468	1,835,689
South Atlantic:						
North Carolina	885,140	690,716	449,010	376,816	436,130	313,900
South Carolina	691,354	448,977	440,372	298,758	250,982	150,219
Virginia	563,478	442,907	168,518	165,956	394,960	276,951
Total	2,139,972	1,582,600	1,057,900	841,530	1,082,072	741,070
East Gulf:						
Florida	531,800	347,900	415,500	278,300	116,300	69,600
Georgia	1,356,632	927,929	993,143	679,525	363,489	248,404
Total	1,888,432	1,275,829	1,408,643	957,825	479,789	318,004
Central Gulf:						
Alabama	947,140	807,183	718,691	521,487	228,459	285,696
Mississippi	966,261	745,962	591,665	461,870	374,596	284,092
Tennessee	509,100	216,400	102,900	33,200	406,200	183,200
Total	2,422,510	1,769,545	1,413,256	1,016,557	1,009,254	752,988
West Gulf:						
Arkansas	778,511	620,108	402,972	290,414	375,539	329,694
Louisiana	743,842	721,637	604,804	522,901	139,038	198,736
Oklahoma	70,066	52,076	48,421	22,532	21,645	29,544
Texas	565,972	461,162	464,828	335,366	101,144	125,796
Total	2,158,391	1,854,983	1,521,025	1,180,213	637,366	674,770
Total, South	8,609,305	6,482,957	5,400,824	3,996,125	3,208,481	2,486,832
Pacific Northwest:						
Alaska: Coastal	31,200	157,000	30,938	157,000	262	0
Oregon:						
Western	786,000	1,204,000	633,000	1,183,000	153,000	21,000
Eastern	365,000	352,000	364,500	352,000	500	0
Summary	1,151,000	1,556,000	997,500	1,535,000	153,500	21,000

See footnotes at end of table.

TABLE B-2-7 (Cont'd.)

NET ANNUAL GROWTH AND REMOVALS OF GROWING STOCK ON COMMERCIAL TIMBERLAND IN THE UNITED STATES, 1970
(000 cubic feet)

Section, region, and State	All species		Softwoods		Hardwoods	
	Growth	Removals	Growth	Removals	Growth	Removals
Pacific Northwest—Continued						
Washington:						
Western	945,000	1,300,000	720,000	1,237,000	225,000	63,000
Eastern	299,400	236,070	296,000	234,000	3,400	2,070
Summary	1,244,400	1,536,070	1,016,000	1,471,000	228,400	65,070
Total	2,426,600	3,249,160	2,044,438	3,163,090	382,162	86,070
Pacific Southwest:						
California	630,000	927,000	545,000	901,000	85,000	26,000
Hawaii	[2] 0	2,157	[2] 0	17	[2] 0	2,140
Total	630,000	929,157	545,000	901,017	85,000	28,140
Total, Pacific Coast	3,056,600	4,178,317	2,589,438	4,064,107	467,162	114,210
Northern Rocky Mountain:						
Idaho [3]	502,963	357,256	496,981	357,210	5,982	46
Montana [3]	443,141	324,411	439,644	324,379	3,497	32
South Dakota (West) [3]	27,110	15,655	26,910	15,655	200	0
Wyoming [3]	45,753	36,155	42,754	36,155	2,999	0
Total	1,018,967	733,477	1,006,289	733,399	12,678	78
Southern Rocky Mountain:						
Arizona [3]	71,275	87,741	66,239	87,557	5,036	184
Colorado [3]	157,338	58,993	123,393	57,489	33,945	1,504
Nevada [3]	2,293	10	2,052	10	241	0
New Mexico [3]	75,061	44,096	65,888	43,600	9,173	496
Utah [3]	36,207	12,740	25,598	12,280	10,609	460
Total	342,174	203,570	283,170	200,916	59,004	2,654
Total, Rocky Mountain	1,361,141	937,047	1,290,459	934,315	71,682	2,732
Total, all regions	18,567,647	14,032,808	10,666,854	9,623,345	7,900,793	4,409,463

1. Zeros indicate no data or negligible amounts.

2. Growth estimate for Hawaii is not available.

3. Estimates of area subclasses do not include 5.0 million acres of national forest lands in the Rocky Mountain States that are not included in the base for allowable cut because of such factors as unstable soils, small size of isolated patches and stringers, or special use constraints. Volume and growth data are also excluded for these areas.

APPENDIX B-3

TYPICAL DENSITIES AND YIELDS OF CHEMICAL PULP FOR VARIOUS WOOD SPECIES[a]

A. Softwoods

Species	Density[b] (lb/cu ft)	Yield of Chemical Pulp[c] (%)	
		Sulfite	Kraft[e]
Cedar:			
Atlantic white	19	-	45
Eastern red	27	-	45
Western red	19	43	40
Douglas-fir, coast type	28	48	48
Fir:			
Balsam	21	47	50
California red	23	48	48
Grand	23	49	48
Noble	22	48	47
Pacific silver	22	49	49
White	22	48	48
Hemlock:			
Carolina	30	48	45
Eastern	24	44	45
Mountain	26	-	45
Western	24	46	47
Larch:			
Tamarack	31	42	48
Western	32	42	48
Pine:			
Jack	25	45	48
Limber	23	-	48
Loblolly	29	45	48
Lodgepole	24	45	48
Longleaf	34	45	48
Monterey	29	45	48
Pine (cont'd)			
Pinyon	31	40	45
Pitch	29	43	48
Ponderosa	24	45	48
Red	26	45	48
Sand	29	46	47
Shortleaf	29	45	48
Slash	35	45	48
Sugar	22	45	48
Virginia	28	43	48
White, eastern	21	-	48
White, western	23	45	48
Redwood	24	-	38
Spruce:			
Black	24	48	50
Blue	23	48	43
Red	24	48	50
Sitka	23	48	47
White	23	48	50

APPENDIX B-3 (Cont'd)

TYPICAL DENSITIES AND YIELDS OF CHEMICAL PULP FOR VARIOUS WOOD SPECIES[a]

B. Hardwoods

Species	Density[b] (lb/cu ft)	Yield of Chemical Pulp[c] (%)	
		Sulfite	Kraft
Ash, green	33	-	44
Beech, American	35	44	49
Birch:			
Paper	30	46	50
Yellow	34	45	53
Elm, American	29	-	46
Hickory, Mockernut	40	40	48
Maple:			
Red	31	45	43
Sugar	35	45	43
Oak:			
Blackjack	40	41	42
Chestnut	36	-	45
Northern red	35	45	46
Overcup	36	-	46
Post	37	-	44
White	37	45	-
Poplar:			
Aspen, quaking	22	52	54
Aspen, bigtooth	22	50	-
Balsam	19	49	50
Cottonwood, eastern	23	52	52
Cottonwood, swamp	24	47	47
Sugarberry	29	44	46
Sweetgum	29	46	50
Sycamore, American	29	47	-
Tupelo:			
Black	29	48	48
Swamp	34	46	48
Willow, black	24	52	52
Yellow-poplar	24	47	47

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[a] Considerable variation between samples of the same species can be expected.

[b] Moisture-free weight, green volume

[c] Yields of moisture-free, screened pulp based on weight of moisture-free wood. Screenings, which may amount to about 0.05%, are frequently refined and returned to the pulp system or converted into lower grade products and therefore are not always actually lost

[d] Bleachable pulp of papermaking grade. Yields given for sulfite pulp made from the pines, Douglas-fir and the larches are based on use of young wood essentially free from heartwood or on the use of a modification of the standard lime-base process.

[e] Unbleached pulp for brown paper and boards; bleachable pulp may be 2-3% lower than the values given.

Source: "Pulp Yields for Various Processes and Wood Species," Forest Products Laboratory Bulletin FPL-031, Feb. 1964.

APPENDIX C - SUPPORTING DATA FOR WASTE PAPER

APPENDIX C-1

WASTE PAPER PRICES

Tables C-1-1 and C-1-2 are reproduced from Official Board Markets and Fibre Market News respectively. They are examples of the waste paper price information reported by these two publications. Official Board Markets lists prices paid to the dealer by the mill; Fibre Market News lists prices paid by dealers. For the curves that appear in Section VI (Volume I), monthly averages were calculated from these published prices and plotted, in most cases for the period between mid-1972 and mid-1974. Prices for selected grades in the New York City market for the years 1967-1972 are plotted in Figure C-1-1.

TABLE C-1-1

DEALERS' SELLING PRICES (SAMPLE LISTING)

(Paper Stock Prices per Ton)

Based on transactions for week ended Tuesday before this issue date. Board mill market prices, F.O.B. trucks or cars at dealer's or producer's plant, exclusive of delivery, premium, spot or distress lots, special packing; or other special charges. Grades as defined in current Paper Stock Institute Standards and Practices Circular (now PS-73); grade numbers in parentheses.

Market Cities or Areas	No. 1 Mixed (2)	Boxboard Cuttings (4)	No. 1 News (6)	Corrug. Containers (11)	Corrug. Cuttings (12)	Sorted Wh. Led. (40)
Chicago	$20.00 22.00	$28.00 30.00	$29.00	$50.00	$55.00 60.00	$72.00 ....
Cincinnati	23.00 25.00	21.00 28.00	28.00	52.00 55.00	62.50	80.00 ....
Cleveland	24.00	21.00	28.00	50.00	45.00 50.00	65.00
Detroit	14.00	18.00	18.25	50.00	[illegible]	45.00 [illegible]
Buffalo	14.50 16.00	12.00	21.00	45.00	43.00 [illegible]	45.00
Boston	20.00 21.00	18.00 20.00	25.00 27.00	38.00 40.00	....	[illegible] 90.00
New York	16.00 20.00	16.00 20.00	20.00 25.00	35.00 38.00	[illegible]	70.00 75.00
Philadelphia ...	22.00 23.00	18.00	25.00	45.00	43.00	52.50 57.00
South	24.00	27.00	30.00*	50.00	43.00	70.00
Southeast	24.00	24.00 27.00	[illegible]	[illegible]	48.00	70.00
Los Angeles Area	18.00 13.00	17.00 19.00	27.00 30.00	42.00 46.00	48.00	70.00 73.00
San Francisco Area	14.00 17.00	19.00 21.00	[illegible] 32.00	44.00 47.00	49.00	65.00 70.00

	New Bld. Kraft Lined Corr. Cuts		White News Blanks (24)	No. 1 Soft White Shavings (28-29)	Hard White Shavings (30)	Hard White Env. Cuts (31)	Manila Tab Cards (27)
	Uniform .009 (14)	Mixed .009 (13)					
East ....$	60.00 72.00	$ 55.00 66.00	$ [illegible] 85.00	$ 90.00 95.00	$135.00 140.00	$145.00 175.00	$[illegible] 165.00
Mid-west. .	68.00 72.50	55.00 65.00	75.00 85.00	90.00 100.00	140.00 150.00	190.00 200.00	200.00 205.00
South	60.00 70.00	55.00 65.00	80.00 85.00	75.00 85.00	120.00 130.00	165.00 170.00	180.00 190.00
W. Coast .	62.00 66.00	60.00 60.00	60.00 66.00	[illegible] [illegible]	160.00 110.00	160.00	[illegible] ....

*Effective 9-17-73

Source: Official Board Markets, Sept. 29, 1973

TABLE C-1-2

DEALERS' PURCHASE PRICES FOR WASTE PAPER (SAMPLE LISTING)

(Because of depressed conditions in the paper stock market and in view of minimal demand, it is difficult to place value on most grades of waste paper at the present time. Following are prices for baled lots of some waste paper grades.)

NEW YORK

No. 1 hand white envelope Cuttings	$70.00–$75.00
No. 1 soft white shavings	30.00– 35.00
shavings	45.00– 50.00
No. 1 hard colored cuttings	30.00– 35.00
Bleached unprinted sulphate cuttings	60.00– 65.00
New northern Kraft envelope cuttings	40.00– 45.00
No. 1 hard white	
White new cuts, misc.	15.00– 20.00
White new cuts, No. 1	20.00–25.00
Books and magazines	(nominal)
No. 1 books and magazines, free of groundwood	(nominal)
Ledger stock, white	20.00–30.00
Ledger stock, colored	15.00–20.00
Manila tab, cards	40.00–45.00
Colored tab, cards	25.00– 30.00
Triple Sorted Kraft	10.00— 15.00
No. 1 old kraft cuttings	20.00—25.00
Ledger stock colored (for repack)	10.00– 15.00
Paper flour and sugar sacks, all natural kraft only	25.00– 30.00
Fly leaf sulphite (free of groundwood)	10.00– 15.00
Fly leaf woody, No. 1	(nominal)
Fly leaf shavings, No. 1	(nominal)
Fly leaf woody, No. 2	(nominal)
Double-lined new corrugated kraft cuttings (misc. med.)	10.00—15.00
cuttings (chem. med.)	15.00— 20.00
No. 1 overissue news, large size black and white, free of heavy ink	3.00– 4.00
No. 2 overissue, newsstand returns, large sizes	(nom.)– 1.00
No. 2 overissue tabloids	(nominal)
Rotos	(nominal)
Folded news, super special	(nominal)
Folded news, special	(nominal)
Folded news, ordinary	(nominal)
Old corrugated boxes	(nominal)
Mill wrappers	(nominal)
Box board cuttings	(nominal)
No. 1 mixed paper	(nominal)
No. 1 office waste	(nominal)

PITTSBURGH

No. 1 hard white envelope cuttings	70.00– 75.00
No. 1 hard white shavings	45.00– 50.00
No. 1 soft white shavings	30.00– 35.00
White news cuts, No. 1	20.00– 25.00
Manila tab, cards	40.00– 45.00
Colored tab, cards	25.00– 30.00
Ledger stock, white, No. 1	30.00– 35.00
Ledger stock, olored	20.00– 25.00
No. 1 magazine free of groundwood	(nominal)
No. 1 book and magazines	(nominal)
Flyleaf Woody (Mixed)	(nominal)
Coating Sulfite Shavings (Free Groundwood)	10.00– 15.00
Paper flours and sugar sacks kraft only	25.00– 30.00
Double-lined new corrugated kraft cuttings (chem med.)	20.00– 25.00
(misc. medium)	15.00– 20.00
Old corrugated boxes	(nominal)
No. 1 mixed paper	(nominal)
Folded news	(nominal)

CHICAGO

(Chicago area dealers buying prices)

No. 1 hard white envelope cuttings	70.00– 75.00
Ledger stock, white	
Ledger stock, colored	15.00—20.00
Manila tab, cards	40.00– 45.00
Colored tab, cards	25.00– 30.00
Mixed books, magazines	(nominal)
Old corrugated boxes	(nominal)
Folded news	(nominal)
Super mixed	(nominal)
No. 1 mixed paper	(nominal)

PHILADELPHIA

(Philadelphia area large packers buying prices in carload quantities f.o.b. Phila.)

No. 1 hard white envelope cuttings	70.00– 75.00
Natural Kraft paper flours, sugar sacks	25.00– 30.00
Ledger stock, white	25.00—30.00
Ledger stock, colored	15.00—20.00
No. 1 white news cuts	20.00– 25.00
Corrugated boxes, baled in 500 lb. lots	(nominal)
No. 1 mixed	(nominal)

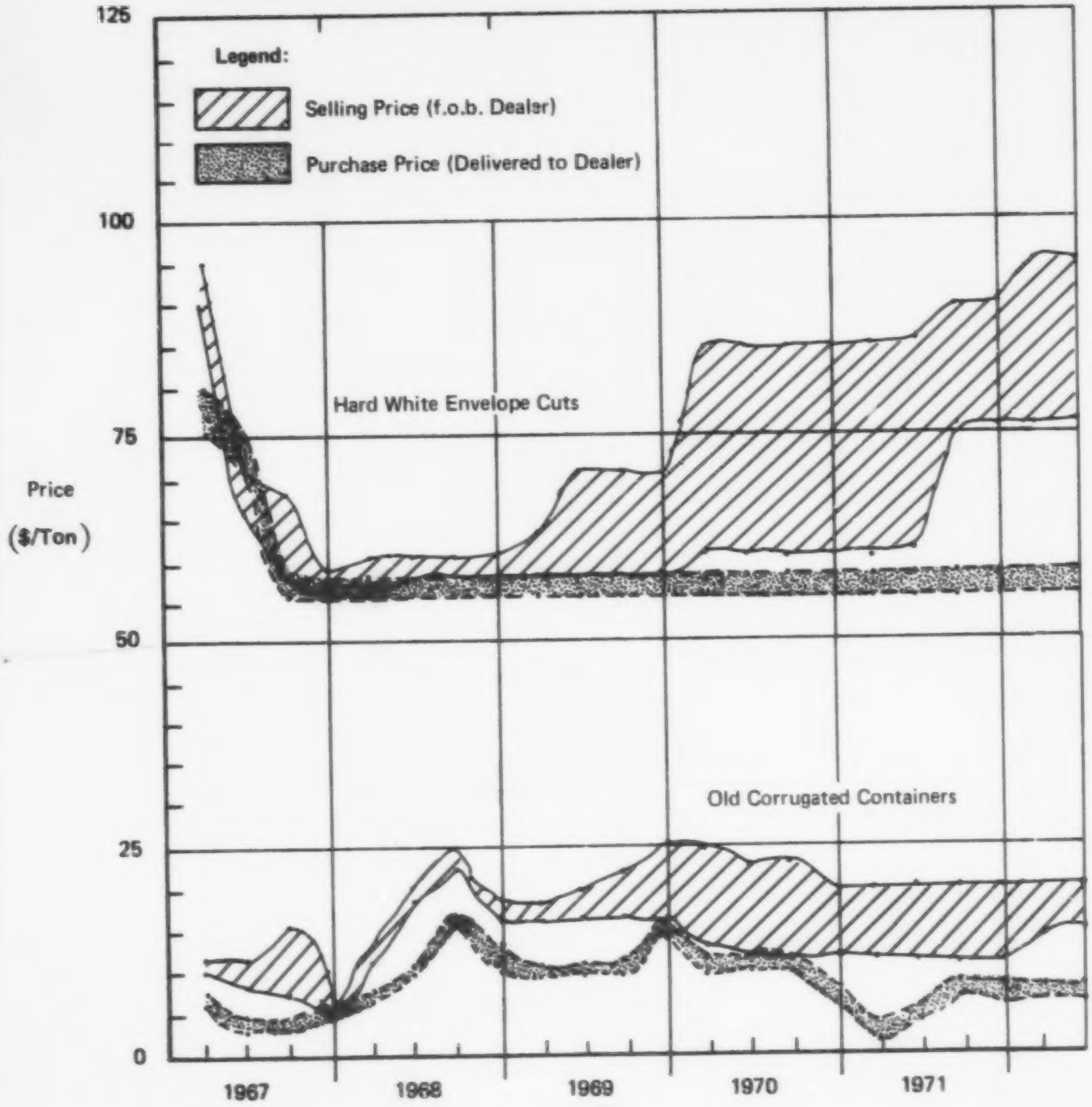
(Following are prices being paid by dealers for news packed to mills specifications.)

Regular baled news	(nominal)
No. 1 baled news	(nominal)
Special news (replacement for overissue)	(nominal)

BOSTON

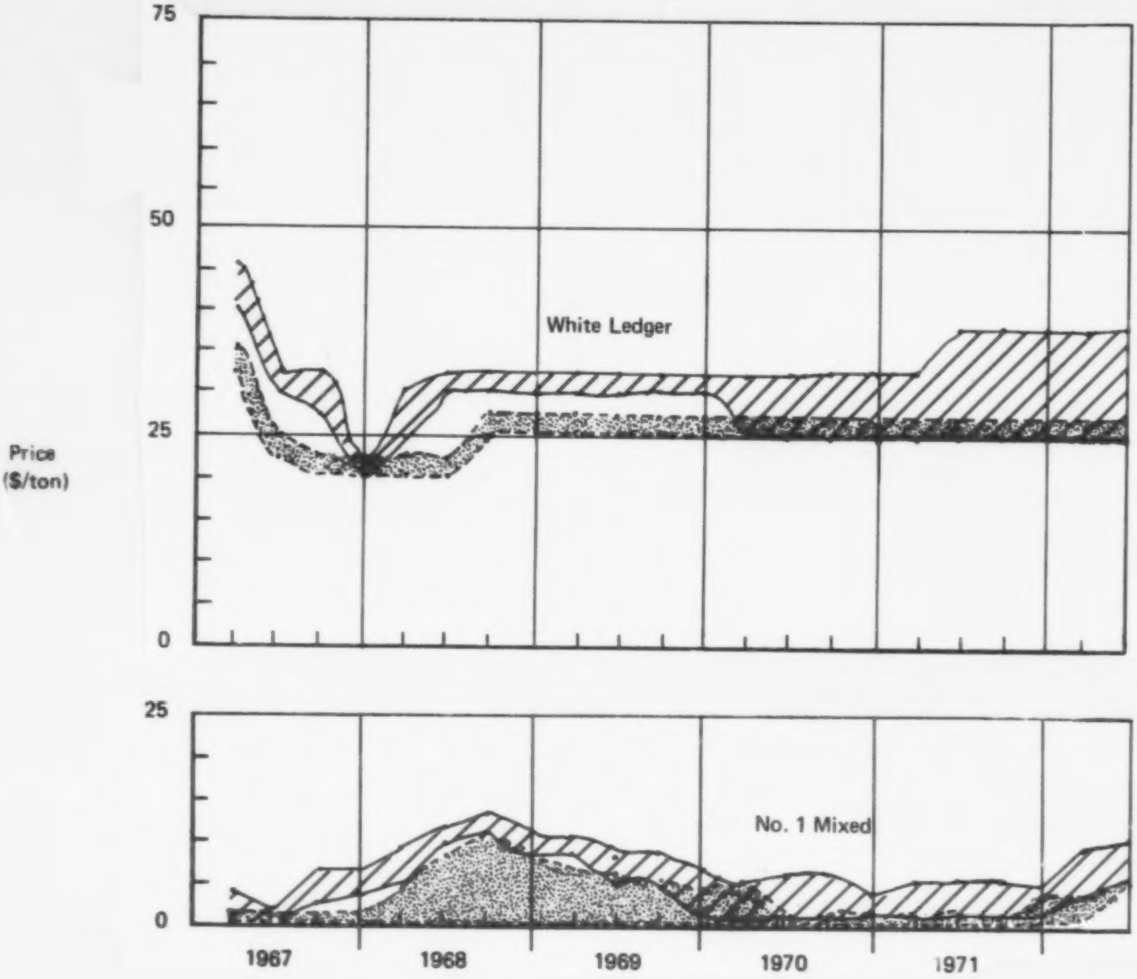
Folded news	(nominal)
No. 1 mixed	(nominal)
Old corrugated	(nominal)

Source: "Paper Stock Prices," Fibre Market News, Aug. 15, 1975



Sources: Selling prices – *Paper Trade Journal*
Purchase prices – *Fiber Market News*

FIGURE C–1–1 DEALERS' PURCHASE AND SELLING PRICE RANGES FOR WASTE PAPER – NEW YORK CITY MARKET



Sources: Selling prices – *Paper Trade Journal*
Purchase prices – *Fiber Market News*

FIGURE C–1–1 (Cont'd) DEALERS' PURCHASE AND SELLING PRICE RANGES FOR WASTE PAPER – NEW YORK CITY MARKET

APPENDIX C-2

DERIVATION OF COLLECTABLE TONNAGE FOR OLD CORRUGATED CONTAINERS
BASE YEAR – 1973

	Containerboard Consumption[a] (000 tons)	Collectable Tonnage of OCC				Total (Retail and Mfg) (000 tons)	Converter Waste (000 tons)	Total Collectable Tonnage[f]	
		Retail Sector[b]		Manufacturing Sector[b]				(Retail and Mfg and Converter)	
		PCF[c] (%)	(000 tons)[d]	"G" Factor[e]	(000 tons)[d]			(000 tons)	% Recovery
New England									
Maine	76	29.1	10	1.202	53	63	8	71	93
New Hampshire	59	30.7	7	1.214	41	48	6	54	92
Vermont	35	0	0	0.934	0	0	4	4	11
Massachusetts	444	96.3	180	1.022	262	442	49	491	111
Rhode Island	74	80.8	25	1.258	53	78	8	86	116
Connecticut	241	83.1	84	1.236	173	257	27	284	118
Total Region	**929**		**306**		**582**	**888**	**102**	**990**	**107**
Middle Atlantic									
New York	1,417	93.0	556	0.887	726	1,282	156	1,438	101
New Jersey	568	65.3	156	1.161	381	537	62	599	105
Pennsylvania	904	90.2	344	1.227	643	987	99	1,086	120
Total Region	**2,888**		**1,056**		**1,750**	**2,806**	**317**	**3,123**	**108**
Total North East	**3,818**		**1,362**		**2,332**	**3,694**	**419**	**4,113**	**108**
East North Central									
Ohio	830	82.2	287	1.289	619	906	91	997	120
Indiana	407	61.5	106	1.391	327	433	45	478	117
Illinois	868	75.9	278	1.112	557	835	95	930	107
Michigan	698	80.3	236	1.332	536	772	77	849	122
Wisconsin	346	56.1	82	1.214	242	324	38	362	105
Total Region	**3,149**		**989**		**2,281**	**3,270**	**346**	**3,616**	**115**
West North Central									
Minnesota	298	63.7	80	0.873	150	230	33	263	88
Iowa	216	29.7	27	0.947	118	145	24	169	78
Missouri	364	85.3	130	0.978	206	336	40	376	103
N. Dakota	47	20.6	4	0.258	7	11	5	16	34
S. Dakota	50	14.6	3	0.432	12	15	6	21	42
Nebraska	114	49.7	24	0.674	44	68	13	81	71
Kansas	173	24.7	18	0.795	84	102	19	121	70
Total Region	**1,262**		**286**		**621**	**907**	**140**	**1,047**	**83**
Total North Central	**4,411**		**1,275**		**2,902**	**4,177**	**486**	**4,663**	**106**

APPENDIX C-2 (Contd.)

	Containerboard Consumption[a] (000 tons)	Collectable Tonnage of OCC				Total (Retail and Mfg) (000 tons)	Converter Waste (000 tons)	Total Collectable Tonnage[f]	
		Retail Sector[b]		Manufacturing Sector[b]				(Retail and Mfg and Converter)	
		PCF[c] (%)	(000 tons)[d]	"G" Factor[e]	(000 tons)[d]			(000 tons)	% Recovery
South Atlantic									
Delaware	44	70.4	13	1.168	30	43	5	48	109
Maryland	315		93	0.800	146	239	35	274	87
District of Columbia	62	100	26	0.199	7	33	7	40	65
Virginia	365	42.8	66	0.953	200	266	40	306	84
West Virginia	130	51.7	28	0.913	68	96	14	110	85
North Carolina	394	46.4	75	1.417	323	398	43	441	112
South Carolina	200	44.9	38	1.460	169	207	22	229	115
Georgia	361	57.4	87	1.068	223	310	40	350	97
Florida	547	85.1	196	0.516	164	360	60	420	77
Total Region	**2,419**		**529**		**1,330**	**1,952**	**266**	**2,218**	**92**
East South Central									
Kentucky	248	38.2	40	1.056	152	192	27	219	88
Tennessee	305	65.3	84	1.242	114	198	34	232	76
Alabama	284	58.4	65	1.202	183	248	29	277	105
Mississippi	169	19.6	14	1.267	124	138	19	157	93
Total Region	**986**		**203**		**573**	**776**	**109**	**885**	**90**
West South Central									
Arkansas	149	37.0	23	1.202	103	126	16	142	95
Louisiana	284	62.4	74	0.130	103	177	31	208	73
Oklahoma	198	53.5	45	0.680	78	123	22	145	73
Texas	884	77.8	291	0.733	378	669	97	766	87
Total Region	**1,515**		**433**		**662**	**1,095**	**166**	**1,261**	**83**
Total South	**4,920**		**1,165**		**2,565**	**3,823**	**541**	**4,364**	**89**
Mountain									
Montana	53	25.4	6	0.497	15	21	6	27	51
Idaho	55	16.6	4	0.807	26	30	6	36	65
Wyoming	26	0	0	0.292	4	4	3	7	27
Colorado	176	73.1	54	0.606	62	116	19	135	77
New Mexico	79	32.8	11	0.335	16	27	9	36	46
Arizona	143	76.9	46	0.581	48	94	16	110	77
Utah	84	81.1	29	0.615	30	59	9	68	81
Nevada	41	79.4	14	0.155	4	18	5	23	56
Total Region	**657**		**164**		**205**	**369**	**73**	**442**	**67**

APPENDIX C-2 (Cont'd.)

	Containerboard Consumption[a] (000 tons)	Collectable Tonnage of OCC				Total (Retail and Mfg) (000 tons)	Converter Waste (000 tons)	Total Collectable Tonnage[f] (Retail and Mfg and Converter)	
		Retail Sector[b]		Manufacturing Sector[b]					
		PCF[c] (%)	(000 tons)[d]	"G" Factor[e]	(000 tons)[d]			(000 tons)	% Recovery
Pacific (Contiguous)									
Washington	270	66.4	75	0.839	131	206	30	236	87
Oregon	166	67.0	47	0.922	88	135	18	153	92
California	1,603	90.8	616	0.835	778	1,394	176	1,570	98
Total Region	**2,039**		**740.**		**997**	**1,735**	**224**	**1,959**	**96**
Pacific (Non-Contiguous)									
Alaska	24	62.4	6	0.351	5	11	3	14	58
Hawaii	61		16	0.357	13	29	7	36	59
Total Region	**85**		**22**		**18**	**40**	**10**	**50**	**59**
Total Mountain & Pacific	**2,781**		**926**		**1,220**	**2,144**	**307**	**2,451**	**88**
Total U.S.	**15,930**		**4,728**		**9,019**	**13,838**	**1,753**	**15,591**	**98**

a. Distribution of apparent consumption by state, calculated by multiplying state population by national average per capita consumption (from API).

b. Tonnages based on finding by Fibre Box Board Association that 42.2% of all containers are used in retail sector and 57.8% in manufacturing sector.

c. See notes to Appendix C-3 for source of Population Concentration Factor

d. For method of calculation see Table VII-7.

e. Ratio of state to national percentage of employees in manufacturing industries

f. These figures deviate from those tabulated in the text (e.g., Table VII-8) by 1-2% because those listed here were further refined after the body of the report was issued.

APPENDIX C-3

DERIVATION OF COLLECTABLE TONNAGE OF OLD NEWS
Base Year: 1973

	Apparent Consumption (1) (000 tons)		PCF (2) (%)	Collectable Tonnage (3) (000 tons)	
NEW ENGLAND					
Maine	25.1		29.1	7.3	
New Hampshire	13.5		30.7	4.1	
Vermont	8.2		0	-	
Massachusetts	317.4		96.3	305.6	
Rhode Island	49.6		80.8	40.1	
Connecticut	137.7		83.1	114.4	
Total Region		551.5			471.5
MIDDLE ATLANTIC					
New York	1,302.6		93.0	1,211.4	
New Jersey	318.1		65.3	207.7	
Pennsylvania	608.2		90.2	548.6	
Total Region		2,228.9			1,967.7
TOTAL NORTHEAST		2,780.4			2,439.2
EAST NORTH CENTRAL					
Ohio	599.4		81.2	492.3	
Indiana	219.3		61.5	134.9	
Illinois	626.7		75.9	475.7	
Michigan	452.4		80.3	363.3	
Wisconsin	207.4		56.1	116.4	
Total Region		2,105.2			1,582.6
WEST NORTH CENTRAL					
Minnesota	164.8		63.7	105.0	
Iowa	99.8		29.7	29.6	
Missouri	239.3		85.3	204.1	
North Dakota	15.0		20.6	3.1	
South Dakota	12.4		14.6	2.0	
Nebraska	65.2		49.7	32.4	
Kansas	56.2		24.7	13.9	
Total Region		652.7			390.1
TOTAL NORTH CENTRAL		2,757.9			1,972.7

(cont'd)

APPENDIX C-3 (Cont'd.)

DERIVATION OF COLLECTABLE TONNAGE OF OLD NEWS

	(1) Apparent Consumption (000 tons)		(2) PCF (%)	(3) Collectable Tonnage (000 tons)	
SOUTH ATLANTIC					
Delaware Maryland	158.9		70.4	111.9	
District of Columbia	284.2		100.0	284.2	
Virginia	140.0		42.8	59.9	
West Virginia	43.4		51.7	21.9	
North Carolina	171.4		45.4	77.8	
South Carolina	69.2		44.9	31.1	
Georgia	206.2		57.4	118.4	
Florida	585.6		85.1	498.3	
Total Region		1,657.9			1,203 6
EAST SOUTH CENTRAL					
Kentucky	105.5		38.2	40.3	
Tennessee	162.4		65.3	106.0	
Alabama	95.7		58.4	55.9	
Mississippi	38.1		19.6	7.5	
Total Region		401.7			209.7
WEST SOUTH CENTRAL					
Arkansas	42.0		37.0	15.5	
Louisiana	142.3		62.4	88.8	
Oklahoma	118.6		53.5	63.6	
Texas	634.6		77.8	493.7	
Total Region		937.5			661.6
TOTAL SOUTH		2,997.1			2,074.9
MOUNTAIN					
Montana	15.2		25.4	3.9	
Idaho	17.1		16.6	2.8	
Wyoming	4.9		0	-	
Colorado	160.9		73.1	117.4	
New Mexico	26.1		32.9	8.6	
Arizona	130.2		76.9	100.1	
Utah	42.4		81.1	34.4	
Nevada	27.4		79.4	21.8	
Total Region		424.2			289.0

(cont'd)

APPENDIX C-3 (Cont'd.)

DERIVATION OF COLLECTABLE TONNAGE OF OLD NEWS

	(1) Apparent Consumption (000 tons)		(2) PCF (%)	(3) Collectable Tonnage (000 tons)	
PACIFIC (Contiguous)					
Washington	159.9		66.4	106.2	
Oregon	109.0		67.0	73.0	
California	1,221.1		90.8	1,109.7	
Total Region (Contiguous)		1,491.0			1,288.9
PACIFIC (Non-Contiguous)					
Alaska Hawaii	51.9		62.4	32.4	
Total Region (Non-Contiguous)		51.9			32.4
TOTAL MOUNTAIN & PACIFIC		1,967.1			1,610.3
TOTAL U.S.		10,504.5			8,097.2

SOURCE: 1. Apparent Consumption of Newsprint from ANAP Data 1973

2. Population Concentration Factor (PCF), ADL calculation based upon:

   a) Projections of Population of States, 1975 to 1990, and Census Populations, 1960 and 1970. Table 1 of current population reports Series P-25, No. 477, 1972 by U.S. Dept. of Commerce. Series I-E of the table used.
   b) Estimates of the population of standard metropolitan statistical areas and their constituent counties: July 1, 1971 and 1972. Table 1 of Current Population Reports, Series P-25, No. 505, 1973 by U.S. Dept. of Commerce.
   c) Summary of Projections of Total Population, 1960 to 2020, Table A of Current Population Reports, Series P-25, No. 493, 1972 by U.S. Dept. of Commerce. Series E of the table was used.

3. Collectable Tonnage - ADL calculations based upon 1) apparent consumption and 2) PCF.

APPENDIX C-4

WASTE PAPER USAGE IN SELECTED PAPER AND PAPERBOARD GRADES

Tables C-4-1 through C-4-5 summarize waste paper usage in selected paper and paperboard grades, based on reported mill operating data.* The purpose of these tables is not to indicate total consumption but to show some typical proportions and grade mixes of waste paper in paper and board manufacture.

Where more than one functional group is represented by the products from a single mill, it is repeated in each functional group. However, a mill is shown only once within each functional group, even if it produces more than one product grade within that functional group. For example, a mill producing linerboard, corrugating medium, and coated and uncoated boxboard is listed once under containerboard and once under folding boxboard.

Total waste paper, and waste paper by grade where available, are usually shown as a percentage of total fiber furnish. Where specifically noted, however, percentages of waste paper by grade apply to the waste paper furnish rather than total furnish. Where particular grades of waste paper have been reported without an indication of the percentage of furnish, we have shown an (X) under the grades used.

In some cases, waste paper usage has been reported as preconsumer or postconsumer waste. These are not distinct grades, but rather a regrouping of the more detailed waste paper grades indicated.

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* Source: Private communication with Kenneth R. Lowe, Associate Editor, Pulp and Paper.

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TABLE C-4-1

SUMMARY OF WASTE PAPER USAGE IN CONTAINERBOARD

Grade	Characteristics of Reporting Mill				Waste Paper (% of Total Furnish)											
	Location	Plant Cap'y. (tpd)	Product Mix	Tonnage by Grade	Percent of Total Furnish	Mixed Paper	Boxboard Cuttings	OCC	NDLK Cuttings	News	Graded Magazine	Pulp Substitute	Market Pulp (Virgin)	Other	Pre-Consumer	Post-Consumer
Linerboard	W	700	Liner Medium	NR	5.5 2.7	-	-	-	-	-	NR	-	-	-	-	-
	W	1800	Liner Medium	NR	15											15
	S	650	Liner	650	1	-	-	-	-	-	NR	-	-	-	-	-
	S	NR	Liner Medium	NR	20 20				20							
	S	NR	Liner	NR	10	-	-	-	-	-	NR	-	-	-	-	-
	W	300	Liner Medium Ind. Bag Tissue	NR	50 100 30 NR	-	-	-	-	-	NR X	-	-	-	-	-
	S	1500	Liner Medium Ind. Bag	NR	5 20 5	-	-	-	-	-	NR	-	-	-	-	-
	S	1375	Liner Medium Boxboard, unc. Boxboard, ctd.	NR	1 20 1 1	15*	50*		35*							
	W	120	Liner Boxboard, unc.	NR	100 100	X	X	X	X							
	MW	210	Liner Boxboard, unc.	NR	100 100	15	10	30	10	10		25				

*Percentage of waste paper furnish, not total furnish.

TABLE C-4-1 (Cont'd.)

SUMMARY OF WASTE PAPER USAGE IN CONTAINERBOARD

Grade	Characteristics of Reporting Mill				Waste Paper (% of Total Furnish)											
	Location	Plant Cap'y. (tpd)	Product Mix	Tonnage by Grade	Percent of Total Furnish	Mixed Paper	Boxboard Cuttings	OCC	NDLK Cuttings	News	Graded Magazine	Pulp Substitute	Market Pulp (Virgin)	Other	Pre-Consumer	Post-Consumer
Corrugating Medium (see also Linerboard)	MW	96	Medium	96	100										6	94
	S	200	Medium	200	15			10	5							
	MW	300	Medium	300	35			34	1							
	MW	700	Medium	700	10										100	
	NE	200	Medium	200	100										65	35
	S	500	Medium	500	5				5							
	MW	325	Medium	325	35			17.5	17.5							
	W	100	Medium	100	100	-	-	-	-	-	NR	-	-	-	-	-
	MW	330	Medium	330	30	-	-	-	-	-	NR	-	-	-	-	-
	NE	92	Medium	92	100			100								
	S	300	Medium	300	15-18		4	2	10							
	13-mill composite	5000 total	Medium Boxboard, unc. Boxboard, ctd.	NR	40-100 96-100 96-100	5	5	30	5	40		10	5			
	NE	400	Medium	400	95	-	-	-	-	-	NR	-	-	-	-	-
	MW	800	Medium	800	59	5	5	33	6	10						
	MW	160	Medium Boxboard, unc.	NR	100 95		20	20	10	20				30		
	W	400	Medium Boxboard, unc.	NE	100 100	4	4	75	4	8		5				

TABLE C-4-2

SUMMARY OF WASTE PAPER USAGE IN TISSUE AND OTHER MACHINE CREPED PAPER

Grade	Characteristics of Reporting Mill				Waste Paper (% of Total Furnish)											
	Location	Plant Cap'y. (tpd)	Product Mix	Tonnage by Grade	Percent of Total Furnish	Mixed Paper	Boxboard Cuttings	OCC	NDLK Cuttings	News	Graded Magazine	Pulp Substitute	Market Pulp (Virgin)	Other	Pre-Consumer	Post-Consumer
Sanitary Tissue	NE	17	Sanitary	17	100	20		40			40					
	W	300	Sanitary Liner Medium Ind. Bag	NR	NR 50 100 30						X					
	MW	80	Sanitary Wrapping Tissue	NR	40} 50}		10*	20*			30*	40*				
	NE	50	Sanitary Towelling	NR	100} 100}	10		30				60				

*Percentage of waste paper furnish, not total furnish.

TABLE C-4-3

SUMMARY OF WASTE PAPER USAGE IN FOLDING BOXBOARD

Grade	Characteristics of Reporting Mill				Waste Paper (% of Total Furnish)											
	Location	Plant Cap'y. (tpd)	Product Mix	Tonnage by Grade	Fercent of Total Furnish	Mixed Paper	Boxboard Cuttings	OCC	NDLK Cuttings	News	Graded Magazine	Pulp Substitute	Market Pulp (Virgin)	Other	Pre-Consumer	Post-Consumer
Boxboard, coated and uncoated	MW	100	Uncoatd Coated	NR	100 90		8	10	20	30	15	10	7			
	MW	250	Uncoated Coated	NR	95 98	5	12	20	12	33	5	10	3			
	S	1375	Uncoated Coated Liner Medium	NR	1 1 1 20	15*	50*		35*							
	NE	90	Uncoated	90	100	50	10	20		20						
	MW	160	Uncoated Medium	NR	95 100		20	20	10	20				30		
	NE	350	Uncoated	350	99.5	16	17	35	12	14		5.5	0.5			
	NE	135	Uncoated	135	99	5	5	60	2	20		5	1	2		
	W	120	Uncoated Liner	NR	100 100	X	X	X	X							
	MW	NR	Coated	NR	100		9.2	3.7	20.3	36.8		30				
	W	400	Uncoated Medium	NR	100 100	4	4	75	4	8		5				
	MW	210	Uncoated Liner	NR	100 100	15	10	30	10	10		25				
	MW	500	Uncoated Coated	NR	98	1	20	3	19	33	2	10	2	10		
	13-mill composite	5000 total	Uncoated Coated Medium	NR	96-100 96-100 40-100	5	5	30	5	40		10	5			

*Percentage of waste paper furnish, not total furnish.

TABLE C-4-4

SUMMARY OF WASTE PAPER USAGE IN PRINTING, WRITING, AND RELATED PAPERS

Grade	Characteristics of Reporting Mill				Waste Paper (% of Total Furnish)											
	Location	Plant Cap'y. (tpd)	Product Mix	Tonnage by Grade	Percent of Total Furnish	Mixed Paper	Boxboard Cuttings	OCC	NDLK Cuttings	News	Graded Magazine	Pulp Substitute	Market Pulp (Virgin)	Other	Pre-Consumer	Post-Consumer
Fine Papers	NE	350	Fine (Kraft)	350	15	-	-	-	-	-	NR	-	-	-	-	-
	NE	140	Fine	140	30	-	-	-	-	-	NR	-	-	-	-	-
	NW	190	Fine (Kraft & Sulfite)	190	30	-	-	-	-	-	NR	-	-	-	-	-
	MW	50	Fine (Kraft)	50	25	-	-	-	-	-	NR	-	-	-	-	-
	W	300	Fine (Kraft & Sulfite)	300	0.7	-	-	-	-	-	NR	-	-	-	-	-
	MW	135	Fine (Kraft & Sulfite)	135	20	-	-	-	-	-	NR	-	-	-	-	-

TABLE C-4-5

SUMMARY OF WASTE PAPER USAGE IN INDUSTRIAL PACKAGING, CONVERTING & MISCELLANEOUS PAPERS

Grade	Characteristics of Reporting Mill				Waste Paper (% of Total Furnish)											
	Location	Plant Cap'y. (tpd)	Product Mix	Tonnage by Grade	Percent of Total Furnish	Mixed Paper	Boxboard Cuttings	OCC	NDLK Cuttings	News	Graded Magazine	Pulp Substitute	Market Pulp (Virgin)	Other	Pre-Consumer	Post-Consumer
Misc.	NW	50	Creped Tape Flat Tape	NR	100 100										95	5
Industrial Bag Paper	NE	100	Bag Ind. Crepes	NR	50 50-75	-	-	-	-	-	NR	-	-	-	-	-
	S	700	Bag	700	11.1										11.1	
	S	1500	Bag Liner Medium	NR	5 5 20	-	-	-	-	-	NR	-	-	-	-	-
	W	300	Bag Liner Medium Tissue	NR	30 50 100 NR	-	-	-	-	-	NR X	-	-	-	-	-

APPENDIX C-5

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

The following tables present a state-by-state analysis of the consumption of paper and paperboard; hence they provide a basis for estimating the availability of waste paper as presented in Section VII. With the exception of newsprint consumption, which was reported by American Newspaper Publishers Association (ANPA) for 1973, the data represent ADL estimates derived as described in Section VII.

Containerboard . . . . Table C-5-1

Groundwood Paper . . . . Table C-5-2

Tissue and Other Machine Creped Paper . Table C-5-3

Folding Boxboard . . . . Table C-5-4

Printing, Writing and Related Papers . Table C-5-5

Industrial Packaging and Converting. . Table C-5-6

Construction Paper and Paperboard. . . Table C-5-7

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TABLE C-5-1

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Functional Group: CONTAINERBOARD

Region/State	Consumption (000 Short Tons) 1973	 1977	 1983
UNITED STATES	17,700	20,000	25,000
NEW ENGLAND	1,030	1,160	1,450
Maine	80	90	110
New Hampshire	70	80	100
Vermont	40	50	60
Massachusetts	490	550	690
Rhode Island	80	90	110
Connecticut	270	310	380
MIDDLE ATLANTIC	3,210	3,630	4,530
New York	1,570	1,770	2,220
New Jersey	630	710	890
Pennsylvania	1,000	1,130	1,410
EAST NORTH CENTRAL	3,500	3,950	4,940
Ohio	920	1,040	1,300
Indiana	450	510	640
Illinois	960	1,080	1,360
Michigan	780	880	1,100
Wisconsin	380	430	540
WEST NORTH CENTRAL	1,400	1,580	1,980
Minnesota	330	370	470
Iowa	240	270	340
Missouri	400	450	560
North Dakota	50	60	70
South Dakota	60	70	80
Nebraska	130	150	180
Kansas	190	210	270
SOUTH ATLANTIC	2,690	3,040	3,800
Delaware	50	60	70
Maryland	350	400	490
District of Columbia	70	80	100
Virginia	410	460	580
West Virginia	140	160	200
North Carolina	440	500	620
South Carolina	220	250	310
Georgia	400	450	560
Florida	610	690	860

TABLE C-5-1 (Cont'd)

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Region/State	Consumption (000 Short Tons) 1973	1977	1983
EAST SOUTH CENTRAL	1,100	1,240	1,550
Kentucky	280	320	400
Tennessee	340	380	480
Alabama	290	330	410
Mississippi	190	210	270
WEST SOUTH CENTRAL	1,680	1,900	2,370
Arkansas	170	190	240
Louisiana	320	360	450
Oklahoma	220	250	310
Texas	980	1,110	1,380
MOUNTAIN	730	820	1,030
Montana	60	70	80
Idaho	60	70	80
Wyoming	30	30	40
Colorado	200	230	280
New Mexico	90	100	130
Arizona	160	180	230
Utah	90	100	130
Nevada	50	60	70
PACIFIC	2,360	2,670	3,330
Washington	300	340	420
Oregon	180	200	250
California	1,780	2,010	2,510
Alaska	30	30	40
Hawaii	70	80	100

Note: Totals may not add due to rounding

Source: Arthur D. Little, Inc., estimates

TABLE C-5-2

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Functional Group: GROUNDWOOD PAPERS

Region/State	Consumption (000 Short Tons) 1973	1977	1983
UNITED STATES	12,200	13,600	15,800
NEW ENGLAND	640	710	830
Maine	30	30	40
New Hampshire	20	20	30
Vermont	10	10	10
Massachusetts	370	410	480
Rhode Island	60	70	80
Connecticut	160	180	210
MIDDLE ATLANTIC	2,590	2,890	3,360
New York	1,510	1,680	1,960
New Jersey	370	410	480
Pennsylvania	710	790	920
EAST NORTH CENTRAL	2,450	2,730	3,170
Ohio	700	780	910
Indiana	250	280	320
Illinois	730	810	950
Michigan	530	590	690
Wisconsin	240	270	310
WEST NORTH CENTRAL	760	850	980
Minnesota	190	210	250
Iowa	120	130	160
Missouri	280	310	360
North Dakota	20	20	30
South Dakota	10	10	10
Nebraska	80	90	100
Kansas	70	80	90
SOUTH ATLANTIC	1,930	2,150	2,500
Delaware	20	20	30
Maryland	160	180	210
District of Columbia	330	370	430
Virginia	160	180	210
West Virginia	50	60	60
North Carolina	200	220	260
South Carolina	80	90	100
Georgia	240	270	310
Florida	680	760	880

TABLE C-5-2 (Cont'd)

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Region/State	Consumption (000 Short Tons) 1973	1977	1983
EAST SOUTH CENTRAL	470	520	610
Kentucky	120	130	160
Tennessee	190	210	250
Alabama	110	120	140
Mississippi	40	40	50
WEST SOUTH CENTRAL	1,090	1,220	1,410
Arkansas	50	60	60
Louisiana	170	190	220
Oklahoma	140	160	180
Texas	740	820	960
MOUNTAIN	490	550	630
Montana	20	20	30
Idaho	20	20	30
Wyoming	10	10	10
Colorado	190	210	250
New Mexico	30	30	40
Arizona	150	170	190
Utah	50	60	70
Nevada	30	30	40
PACIFIC	1,790	2,000	2,320
Washington	190	210	250
Oregon	130	140	170
California	1,420	1,580	1,840
Alaska	20	20	30
Hawaii	40	40	50

Note: Totals may not add due to rounding

Source: Arthur D. Little, Inc., estimates based upon American Newspaper Publishers Association, Newsprint & Traffic Bulletin No. 12 April 12, 1974

TABLE C-5-3

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Functional Group: TISSUE AND OTHER MACHINE CREPED PAPER

Region/State	Consumption (000 Short Tons) 1973	1977	1983
UNITED STATES	4,000	4,500	5,200
NEW ENGLAND	240	270	320
Maine	20	20	20
New Hampshire	10	20	20
Vermont	10	10	10
Massachusetts	120	140	160
Rhode Island	20	20	20
Connecticut	60	70	80
MIDDLE ATLANTIC	790	890	1,040
New York	400	450	530
New Jersey	160	190	210
Pennsylvania	230	260	300
EAST NORTH CENTRAL	820	930	1,070
Ohio	210	230	270
Indiana	100	110	130
Illinois	250	280	320
Michigan	190	210	240
Wisconsin	80	90	100
WEST NORTH CENTRAL	300	340	390
Minnesota	70	80	90
Iowa	50	60	70
Missouri	80	100	110
North Dakota	10	10	10
South Dakota	10	10	10
Nebraska	30	30	40
Kansas	40	50	60
SOUTH ATLANTIC	560	630	730
Delaware	10	10	10
Maryland	60	70	80
District of Columbia	20	20	30
Virginia	90	100	110
West Virginia	30	30	40
North Carolina	80	100	110
South Carolina	40	50	50
Georgia	80	90	100
Florida	130	150	170

TABLE C-5-3 (Cont'd)

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Region/State	Consumption (000 Short Tons) 1973	1977	1983
EAST SOUTH CENTRAL	200	220	260
Kentucky	50	60	70
Tennessee	60	70	80
Alabama	50	60	70
Mississippi	30	30	40
WEST SOUTH CENTRAL	330	380	440
Arkansas	30	30	40
Louisiana	60	60	70
Oklahoma	40	50	60
Texas	200	230	270
MOUNTAIN	160	180	210
Montana	10	10	20
Idaho	10	10	20
Wyoming	10	10	10
Colorado	40	50	60
New Mexico	20	20	20
Arizona	40	40	50
Utah	20	20	20
Nevada	10	10	10
PACIFIC	570	640	750
Washington	70	80	90
Oregon	40	40	50
California	440	490	570
Alaska	10	10	10
Hawaii	20	20	20

Note: Totals may not add due to rounding

Source: Arthur D. Little, Inc., estimates

TABLE C-5-4

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Functional Group: FOLDING BOXBOARD

Region/State	Consumption (000 Short Tons) 1973	1977	1983
UNITED STATES	7,700	8,300	9,400
NEW ENGLAND	450	480	550
Maine	40	40	40
New Hampshire	30	30	30
Vermont	20	20	20
Massachusetts	240	230	260
Rhode Island	40	40	40
Connecticut	110	120	140
MIDDLE ATLANTIC	1,390	1,500	1,700
New York	680	740	840
New Jersey	280	300	340
Pennsylvania	440	470	540
EAST NORTH CENTRAL	1,520	1,640	1,860
Ohio	400	430	490
Indiana	200	220	240
Illinois	420	450	510
Michigan	330	360	400
Wisconsin	170	180	210
WEST NORTH CENTRAL	610	660	740
Minnesota	150	160	180
Iowa	110	120	130
Missouri	180	190	220
North Dakota	20	20	30
South Dakota	20	30	30
Nebraska	50	60	70
Kansas	80	90	100
SOUTH ATLANTIC	1,170	1,260	1,430
Delaware	20	20	20
Maryland	150	170	190
District of Columbia	30	30	40
Virginia	180	190	220
West Virginia	60	70	80
North Carolina	190	210	230
South Carolina	100	110	120
Georgia	210	220	250
Florida	260	280	320

TABLE C-5-4 (Cont'd)

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

	Consumption (000 Short Tons)		
Region/State	1973	1977	1983
EAST SOUTH CENTRAL	480	510	580
Kentucky	120	130	150
Tennessee	150	160	180
Alabama	130	140	160
Mississippi	80	90	100
WEST SOUTH CENTRAL	730	790	890
Arkansas	70	80	90
Louisiana	140	150	170
Oklahoma	90	100	110
Texas	430	470	540
MOUNTAIN	320	340	390
Montana	30	30	30
Idaho	30	30	30
Wyoming	10	10	20
Colorado	80	90	100
New Mexico	40	40	50
Arizona	70	70	80
Utah	40	40	50
Nevada	20	20	20
PACIFIC	1,030	1,110	1,260
Washington	130	140	160
Oregon	80	90	100
California	780	840	950
Alaska	10	10	10
Hawaii	30	30	40

Note: Totals may not add due to rounding

Source: Arthur D. Little, Inc., estimates

TABLE C-5-5

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Functional Group: PRINTING, WRITING & RELATED PAPERS

Region/State	Consumption (000 Short Tons)		
	1973	1977	1983
UNITED STATES	11,900	13,600	16,800
NEW ENGLAND	730	830	1,020
Maine	50	60	70
New Hampshire	40	50	60
Vermont	20	30	30
Massachusetts	360	410	500
Rhode Island	50	60	80
Connecticut	190	220	270
MIDDLE ATLANTIC	2,370	2,700	3,340
New York	1,200	1,370	1,700
New Jersey	490	560	690
Pennsylvania	680	770	960
EAST NORTH CENTRAL	2,450	2,800	3,460
Ohio	620	710	870
Indiana	300	340	420
Illinois	740	840	1,040
Michigan	560	640	790
Wisconsin	240	270	340
WEST NORTH CENTRAL	900	1,030	1,280
Minnesota	210	240	300
Iowa	150	180	220
Missouri	250	280	350
North Dakota	30	40	40
South Dakota	30	40	50
Nebraska	80	100	120
Kansas	130	150	180
SOUTH ATLANTIC	1,680	1,920	2,370
Delaware	30	40	50
Maryland	250	290	350
District of Columbia	60	70	90
Virginia	260	300	370
West Virginia	80	90	120
North Carolina	250	290	350
South Carolina	120	140	170
Georgia	240	270	340
Florida	390	450	550

TABLE C-5-5 (Cont'd)

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Region/State	Consumption (000 Short Tons) 1973	1977	1983
EAST SOUTH CENTRAL	590	680	840
Kentucky	150	180	220
Tennessee	190	220	270
Alabama	150	180	220
Mississippi	90	100	130
WEST SOUTH CENTRAL	1,000	1,140	1,410
Arkansas	80	100	120
Louisiana	170	190	240
Oklahoma	130	150	180
Texas	610	690	860
MOUNTAIN	470	540	670
Montana	40	40	50
Idaho	40	40	50
Wyoming	20	20	30
Colorado	130	150	180
New Mexico	50	60	70
Arizona	110	120	150
Utah	50	60	80
Nevada	30	40	50
PACIFIC	1,700	1,940	2,400
Washington	200	230	290
Oregon	120	140	170
California	1,310	1,500	1,850
Alaska	20	20	30
Hawaii	50	60	70

Note: Totals may not add due to rounding

Source: Arthur D. Little, Inc., estimates

TABLE C-5-6

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Functional Group: INDUSTRIAL PACKAGING AND CONVERTING

Region/State	Consumption (000 Short Tons) 1973	1977	1983
UNITED STATES	7,600	8,500	10,100
NEW ENGLAND	440	500	590
Maine	40	40	50
New Hampshire	30	30	40
Vermont	20	20	20
Massachusetts	210	240	280
Rhode Island	30	40	50
Connecticut	110	130	150
MIDDLE ATLANTIC	1,380	1,550	1,830
New York	680	760	900
New Jersey	270	300	360
Pennsylvania	430	480	570
EAST NORTH CENTRAL	1,510	1,690	2,000
Ohio	400	440	530
Indiana	200	220	260
Illinois	410	460	550
Michigan	330	380	450
Wisconsin	170	190	220
WEST NORTH CENTRAL	600	670	800
Minnesota	140	160	190
Iowa	110	120	140
Missouri	170	200	230
North Dakota	20	20	30
South Dakota	20	30	40
Nebraska	50	60	70
Kansas	80	90	120
SOUTH ATLANTIC	1,160	1,300	1,540
Delaware	20	20	30
Maryland	150	170	200
District of Columbia	30	30	40
Virginia	170	200	230
West Virginia	60	70	80
North Carolina	190	210	250
South Carolina	100	110	130
Georgia	210	230	270
Florida	260	290	340

TABLE C-5-6 (Cont'd)

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Region/State	Consumption (000 Short Tons) 1973	1977	1983
EAST SOUTH CENTRAL	470	530	630
Kentucky	120	140	160
Tennessee	140	160	190
Alabama	130	150	170
Mississippi	80	90	110
WEST SOUTH CENTRAL	720	810	960
Arkansas	70	80	90
Louisiana	140	150	180
Oklahoma	90	100	120
Texas	430	480	570
MOUNTAIN	310	350	410
Montana	20	30	30
Idaho	30	30	30
Wyoming	10	10	10
Colorado	80	90	110
New Mexico	40	40	50
Arizona	70	80	90
Utah	40	40	50
Nevada	20	20	30
PACIFIC	1,020	1,140	1,360
Washington	130	150	170
Oregon	80	90	110
California	770	860	1,020
Alaska	10	10	10
Hawaii	30	30	40

Note: Totals may not add due to rounding

Source: Arthur D. Little, Inc., estimates

TABLE C-5-7

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Functional Group: CONSTRUCTION PAPER & PAPERBOARD

	Consumption (000 Short Tons)		
Region/State	1973	1977	1983
UNITED STATES	5,900	6,900	8,500
NEW ENGLAND	340	400	500
Maine	30	30	40
New Hampshire	20	30	30
Vermont	10	10	20
Massachusetts	160	190	240
Rhode Island	30	30	40
Connecticut	90	100	130
MIDDLE ATLANTIC	1,070	1,250	1,550
New York	530	610	760
New Jersey	210	250	310
Pennsylvania	340	390	490
EAST NORTH CENTRAL	1,170	1,370	1,690
Ohio	310	360	440
Indiana	150	180	220
Illinois	320	370	460
Michigan	260	300	380
Wisconsin	130	150	190
WEST NORTH CENTRAL	470	550	680
Minnesota	110	130	160
Iowa	80	100	120
Missouri	140	160	200
North Dakota	20	20	20
South Dakota	20	20	30
Nebraska	40	50	60
Kansas	70	80	90
SOUTH ATLANTIC	900	1,050	1,300
Delaware	20	20	20
Maryland	120	140	170
District of Columbia	20	30	30
Virginia	130	160	190
West Virginia	50	60	70
North Carolina	150	170	210
South Carolina	80	90	110
Georgia	160	190	230
Florida	200	230	290

TABLE C-5-7 (Cont'd)

ESTIMATED STATE-BY-STATE CONSUMPTION OF PAPER AND PAPERBOARD

Region/State	Consumption (000 Short Tons) 1973	1977	1983
EAST SOUTH CENTRAL	370	430	530
Kentucky	100	110	140
Tennessee	110	130	160
Alabama	100	120	150
Mississippi	60	80	90
WEST SOUTH CENTRAL	560	660	810
Arkansas	50	60	80
Louisiana	110	120	150
Oklahoma	70	80	100
Texas	330	390	480
MOUNTAIN	240	280	350
Montana	20	20	30
Idaho	20	20	30
Wyoming	10	10	10
Colorado	60	80	90
New Mexico	30	30	40
Arizona	50	60	80
Utah	30	40	40
Nevada	10	20	20
PACIFIC	780	920	1,130
Washington	100	120	140
Oregon	60	80	90
California	600	700	860
Alaska	10	10	10
Hawaii	20	30	30

Note: Totals may not add due to rounding

Source: Arthur D. Little, Inc., estimates

APPENDIX C-6

POPULATION CONCENTRATION FACTOR AND PERCENTAGES OF RETAIL SALES AND MANUFACTURING EMPLOYEES

	PCF (%)	Retail Sales, R_s (% of U.S. Total)	Mfg. Employees, M_s (% of U.S. Total
NEW ENGLAND		5.94	7.04
Maine	29.1	0.48	0.52
New Hampshire	30.7	0.44	0.48
Vermont	0	0.24	0.21
Massachusetts	96.3	2.81	3.10
Rhode Island	80.8	0.42	0.62
Connecticut	83.1	1.55	2.11
MIDDLE ATLANTIC		17.01	19.70
New York	93.0	8.10	8.12
New Jersey	65.3	3.50	4.20
Pennsylvania	90.2	5.42	7.39
E. NORTH CENTRAL		19.31	26.00
Ohio	82.2	4.87	7.12
Indiana	61.5	2.54	3.79
Illinois	75.9	5.51	6.61
Michigan	80.3	4.31	5.84
Wisconsin	56.1	2.08	2.65
W. NORTH CENTRAL		7.42	6.54
Minnesota	63.7	1.77	1.66
Iowa	29.7	1.20	1.21
Missouri	85.3	2.21	2.28
North Dakota	20.6	0.26	0.06
South Dakota	14.6	0.27	0.10
Nebraska	49.7	0.67	0.45
Kansas	24.7	1.04	0.79
SO. ATLANTIC		16.12	14.45
Delaware	70.4	0.33	0.37
Maryland	70.4	2.00	1.28
District of Columbia	100.0	0.34	0.09
Virginia	42.8	2.22	2.00
West Virginia	51.7	0.71	0.64
North Carolina	45.4	2.27	3.86
South Carolina	44.9	1.14	1.89
Georgia	57.4	2.34	2.47
Florida	85.1	4.78	1.87

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APPENDIX C-6 (continued)

POPULATION CONCENTRATION FACTOR AND PERCENTAGES OF RETAIL SALES AND MANUFACTURING EMPLOYEES

	PCF (%)	Retail Sales, R_s (% of U.S.Total)	Mfg. Employees, M_s (% of U.S. Total)
E. SOUTH CENTRAL		5.69	6.86
Kentucky	38.2	1.36	1.43
Tennessee	65.3	1.93	2.61
Alabama	58.4	1.48	1.73
Mississippi	19.6	0.91	1.09
W. SOUTH CENTRAL		9.75	6.66
Arkansas	37.0	0.90	1.01
Louisiana	62.4	1.57	0.92
Oklahoma	53.5	1.24	0.75
Texas	77.8	6.05	3.99
MOUNTAIN		4.75	2.13
Montana	25.4	0.35	0.12
Idaho	16.6	0.35	0.24
Wyoming	0	0.18	0.04
Colorado	73.1	1.32	0.68
New Mexico	32.8	0.50	0.14
Arizona	76.9	1.15	0.54
Utah	81.1	0.54	0.32
Nevada	79.4	0.35	0.06
PACIFIC		14.00	10.63
Washington	66.4	1.67	1.23
Oregon	67.0	1.10	0.99
California	90.8	10.63	8.25
Alaska	62.4	0.18	0.05
Hawaii	62.4	0.43	0.12

Total 1974 retail sales: $558.9 billion

Total 1973 manufacturing employment: 19.97 million

Source: Retail sales - Sales Management, Vol. 115, No. 2 (July 21, 1975) Mfg. employment - Handbook of Labor Statistics 1974, Bulletin 1825, U.S. Department of Labor, p. 121. Total U.S. Consumption - API.

APPENDIX C-7

DERIVATION OF COLLECTABLE TONNAGE OF OLD CORRUGATED CONTAINERS (ALTERNATIVE METHOD)

Base Year - 1973

	Containerboard Consumption (000 tons)	Collectable Tonnage[a] of OCC (000 tons)		Total Retail & Mfg. (000 tons)	Converter Waste (000 tons)	Total Collectable Tonnage (Retail + Mfg + Conv.) (000 tons)
		Retail[b] Sector	Mfg.[b] Sector			
NEW ENGLAND						
Maine	89	9	48	57	9	66
New Hampshire	82	9	44	53	8	61
Vermont	39	0	19	19	4	23
Massachusetts	527	182	285	467	53	520
Rhode Island	94	23	57	80	9	89
Connecticut	332	87	194	281	33	314
Total Region	1,164	310	647	957	116	1,073
MIDDLE ATLANTIC						
New York	1,436	506	748	1,254	144	1,128
New Jersey	691	154	387	541	70	611
Pennsylvania	1,160	329	680	1,009	116	1,125
Total Region	3,286	989	1,815	2,804	330	3,134
Total North East	4,450	1,299	2,462	3,761	446	4,207
EAST NORTH CENTRAL						
Ohio	1,091	269	656	925	109	1,034
Indiana	578	105	349	454	58	512
Illinois	1,088	281	609	890	109	999
Michigan	919	233	538	771	92	863
Wisconsin	426	78	244	322	42	364
Total Region	4,102	966	2,396	3,362	410	3,772

APPENDIX C-7 (continued)

DERIVATION OF COLLECTABLE TONNAGE OF OLD CORRUGATED CONTAINERS (ALTERNATIVE METHOD)

Base Year - 1973

		Collectable Tonnage[a] of OCC (000 tons)				
	Containerboard Consumption (000 tons)	Retail[b] Sector	Mfg.[b] Sector	Total Retail & Mfg. (000 tons)	Converter Waste (000 tons)	Total Collectable Tonnage (Retail + Mfg.+ Conv.) (000 tons)
WEST NORTH CENTRAL						
Minnesota	302	75	153	228	30	258
Iowa	214	24	111	135	21	156
Missouri	398	127	210	337	40	377
N. Dakota	25	4	6	10	3	13
S. Dakota	30	3	9	12	3	15
Nebraska	96	22	41	63	10	73
Kansas	159	17	73	90	16	106
Total Region	1,223	272	603	875	123	998
Total North Central	5,325	1,238	2,999	4,237	533	4,770
SOUTH ATLANTIC						
Delaware	63	16	34	50	6	56
Maryland	280	95	118	213	28	241
Dist. of Columbia	34	23	8	31	3	34
Virginia	371	64	184	248	37	285
West Virginia	118	25	59	84	12	96
North Carolina	565	69	355	424	57	481
South Carolina	278	34	174	208	28	236
Georgia	428	90	227	317	43	360
Florida	548	273	172	445	55	500
Total Region	2,682	689	1,331	2,020	269	2,289

APPENDIX C-7 (Continued)

DERIVATION OF COLLECTABLE TONNAGE OF OLD CORRUGATED CONTAINERS (ALTERNATIVE METHOD)

Base Year - 1973

	Containerboard Consumption (000 tons)	Collectable Tonnage[a] of OCC (000 tons)		Total Retail & Mfg. (000 tons)	Converter Waste (000 tons)	Total Collectable Tonnage (Retail + Mfg. + Conv.) (000 tons)
		Retail[b] Sector	Mfg.[b] Sector			
EAST SOUTH CENTRAL						
Kentucky	247	35	132	167	25	192
Tennessee	411	85	240	325	41	366
Alabama	288	58	159	217	29	246
Mississippi	179	12	100	112	18	130
Total Region	1,128	190	631	821	113	934
WEST SOUTH CENTRAL						
Arkansas	170	22	93	115	17	132
Louisiana	211	66	85	151	21	172
Oklahoma	170	45	69	114	17	131
Texas	860	316	367	683	86	769
Total Region	1,409	449	614	1,063	141	1,204
Total South	5,219	1,328	2,576	3,904	523	4,427
MOUNTAIN						
Montana	38	6	11	17	4	21
Idaho	51	4	22	26	5	31
Wyoming	17	0	4	4	2	6
Colorado	169	65	63	128	17	145
New Mexico	51	11	13	24	5	29
Arizona	141	59	50	109	14	123
Utah	73	29	29	58	7	65
Nevada	32	19	6	25	3	28
Total Region	573	193	198	391	57	448

APPENDIX C-7 (continued)

DERIVATION OF COLLECTABLE TONNAGE OF OLD CORRUGATED CONTAINERS (ALTERNATIVE METHOD)

	Containerboard Consumption (000 tons)	Collectable Tonnage[a] of OCC (000 tons)		Total Retail & Mfg. (000 tons)	Converter Waste (000 tons)	Total Collectable Tonnage (Retail + Mfg. + Conv.) (000 tons)
		Retail[b] Sector	Mfg.[b] Sector			
PACIFIC (Contiguous)						
Washington	251	75	113	188	25	213
Oregon	183	50	91	141	18	159
California	1,638	649	760	1,409	164	1,573
Total Region	2,072	744	964	1,738	207	1,945
PACIFIC (Noncontiguous)						
Alaska	18	8	5	13	2	15
Hawaii	44	18	11	29	4	33
Total Region	62	26	16	42	6	48
Total Mountain & Pacific	2,707	993	1,178	2,171	270	2,441
TOTAL U. S.	17,700	4,858	9,215	14,073	1,772	15,845

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a. For method of calculation see Table VII-21.

b. Tonnages based on finding by Fibre Box Assocation that 42.2% of all containers are used in retail sector and 57.8% in manufacturing sector.

APPENDIX D - SUPPORTING DATA FOR PROCESS ECONOMICS

APPENDIX D-1

COST OF CHEMICALS

Chemical	Basis (f.o.b. Works)	Unit	North-East	North-Central	South	West	Source of Data[a]
Alum, papermaking	Liquor tanks	MT	←	54.1	—	→	2
Calcium Carbonate	quantities	"	←	75.4	—	→	2
Caustic	50% sol'n.	"	←	99[b]	—	→	2
Chlorine	100% solid basis quantities	"	←	88[c]	—	→	2
Clay (Filler)	" "	"	←	25	—	→	1
Clay (Coating)	" "	"	←	42	—	→	3
Lime	Bulk	"	←	20.7	—	→	1
Rosin Size	77% liquor	Kg	←	0.66	—	→	1
Titanium Dioxide	Dry	"	←	0.66	—	→	1
Salt Cake	Bulk	MT	←	33.0	→	20.4	1
Soda Ash	"	Bulk	←	39.0	—	—	1
Sodium Chlorate	"	MT	←	181.5	—	→	1
Sulfur	"	"	←	28.1	—	→	1
Sulfur Dioxide	Tanks	"	←	96.8	—	→	1
Sulfuric Acid	"	"	42.1	39.5	36.0	41.6	3
Wet-Strength Resin							
Melamine formaldehyde	Bulk	Kg	←	1.51	—	→	3
Uformite	Bulk	"	←	0.17	—	→	1
Starch	Bulk	"	←	0.21	—	→	3

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[a] Sources:
1. Chemical Marketing Reporter
2. ADL estimate
3. Direct call to supplier

[b] Average between existing contracts at \$66 - \$77 MT and present prices at \$110-\$140 MT

[c] Average between existing contracts at \$66 - \$77 MT and present prices at \$88-\$110 MT.

APPENDIX D-2

CALCULATION OF ALLOWANCE FOR FRINGE BENEFITS

Item	Percent of Base Hourly Rate
Overtime, premium @ 50% of base rate for 16% of the time worked	5
Vaction, holidays, sick leave (25 days)	9
Bonus, pension, incentives	2
	16%
Additional Hourly Costs	
Group Insurance	3
Workmen's Compensation	6
Payroll Taxes	7
Total	32%

Source: Arthur D. Little, Inc. estimates

APPENDIX D-3

NUMBER AND AVERAGE STRAIGHT-TIME HOURLY EARNINGS[1] OF PRODUCTION AND RELATED WORKERS IN PULP, PAPER, AND PAPERBOARD MILLS, UNITED STATES AND SELECTED REGIONS,[2] NOVEMBER 1972

Item	United States 3/		New England		Middle Atlantic		Southeast		Southwest		Great Lakes		Pacific	
	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings
All production workers	157,878	$4.13	21,785	$3.72	20,656	$3.75	44,698	$4.27	13,483	$4.39	36,355	$4.02	16,456	$4.81
Pulp mills	8,276	4.53	-	-	-	-	4,242	4.44	-	-	-	-	2,959	4.81
Paper mills	106,675	4.09	19,672	3.74	16,787	3.80	21,144	4.23	9,026	4.42	28,921	4.07	8,927	4.81
Paperboard mills	42,727	4.14	1,676	3.50	3,869	3.49	19,312	4.28	4,279	4.30	7,085	3.81	4,570	4.80
Selected occupations by department														
Pulp departments 4/														
Woodyard and wood preparation:														
Crane operators	1,018	4.75	90	4.01	38	3.90	560	5.03	118	4.97	160	4.29	30	4.57
Barkers, drum	252	3.82	23	3.40	15	3.33	102	3.85	35	3.92	50	3.86	14	4.41
Sawyers	214	4.03	8	3.49	-	-	86	3.91	24	3.84	44	3.84	48	4.63
Chippermen	440	3.91	43	3.61	-	-	208	3.94	37	3.88	98	3.89	33	4.33
Knife grinders	138	4.23	18	3.77	12	3.85	48	4.29	22	4.15	17	4.28	20	4.83
Pulpmaking:														
Cooks	897	5.05	61	4.15	42	4.24	306	5.28	117	5.43	143	4.49	188	5.35
Batch digester	508	4.99	35	3.74	19	4.08	225	5.24	64	5.20	89	4.56	56	5.46
Continuous digester	389	5.13	26	4.71	23	4.38	81	5.37	53	5.70	54	4.37	132	5.31
Cooks helpers, first	840	4.35	42	3.75	32	3.75	360	4.41	120	4.60	130	4.01	140	4.56
Batch digester	571	4.26	20	3.59	16	3.97	298	4.33	60	4.25	97	4.04	68	4.54
Continuous digester	269	4.54	22	3.88	16	3.53	62	4.82	60	4.95	33	3.95	72	4.58
Grindermen	598	3.81	149	3.35	42	3.50	100	4.10	-	-	151	3.77	-	-
Washer operators (sulphate)	354	4.73	-	-	-	-	170	4.93	40	4.62	27	4.18	88	4.70
Screenmen 5/	424	4.31	39	3.34	-	-	154	4.54	25	4.17	70	4.02	102	4.75
Sulphate process	231	4.47	-	-	-	-	142	4.53	23	4.14	13	4.09	32	4.79
Sulphite process	101	4.31	12	3.17	-	-	-	-	-	-	27	3.97	54	4.72
Bleachermen 5/	526	4.85	48	3.58	28	4.04	148	5.28	57	5.47	113	4.19	112	5.31
Sulphate process	302	5.11	20	3.53	11	3.89	135	5.33	52	5.43	20	4.43	44	5.32
Sulphite process	133	4.74	11	3.66	-	-	-	-	-	-	46	4.32	60	5.31
Wet-machine operators 5/	201	4.20	41	3.25	-	-	36	5.29	-	-	88	4.05	21	5.15
Sulphate process	96	4.67	-	-	-	-	36	5.29	-	-	30	4.04	-	-
Pulp testers 5/	737	3.92	82	3.27	55	3.52	246	3.95	98	3.90	117	3.92	119	4.44
Sulphate process	451	3.96	36	3.40	9	3.61	217	3.96	86	3.89	33	4.01	50	4.43
Sulphite process	108	4.05	-	-	-	-	18	3.93	-	-	27	3.97	40	4.50
Recovery, caustic and acid making:														
Acid makers (sulphite)	124	4.55	-	-	-	-	-	-	-	-	49	4.20	60	4.93
Evaporator operators (sulphate)	348	4.74	11	3.60	-	-	187	4.87	-	-	[illegible]	4.03	47	4.94
Recovery operators (sulphate)	511	5.15	15	4.12	-	-	221	5.33	76	5.28	59	4.46	97	5.18
Recovery helpers, first (sulphate)	638	4.39	-	-	-	-	325	4.48	123	4.42	62	4.01	80	4.42
Caustic operators (causticisers) (sulphate)	370	4.73	11	3.73	-	-	189	4.86	75	4.66	19	4.14	56	4.85
Lime-kiln operators (sulphate)	311	4.58	-	-	-	-	187	4.65	44	4.52	17	4.19	50	4.82

See footnotes at end of table.

APPENDIX D-3 (Cont'd)

NUMBER AND AVERAGE STRAIGHT-TIME HOURLY EARNINGS[1] OF PRODUCTION AND RELATED WORKERS IN PULP, PAPER, AND PAPERBOARD MILLS, UNITED STATES AND SELECTED REGIONS,[2] NOVEMBER 1972

Item	United States 3/		New England		Middle Atlantic		Southeast		Southwest		Great Lakes		Pacific	
	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	average hourly earnings	Number of workers	Average hourly earnings
Paper and paperboard departments														
Stock preparation:														
Head stock preparers, group I 5/------	572	$4.73	149	$4.06	45	$4.41	127	$5.01	44	$5.15	121	$4.75	75	$5.46
Fine grades------------------------	320	4.66	97	4.11	38	4.29	46	4.66	17	5.47	82	4.84	36	5.65
Head stock preparers, group II 5/-----	1,454	4.20	249	3.96	339	3.90	143	4.79	71	4.99	474	4.14	112	4.87
Fine grades------------------------	569	4.27	135	4.06	147	4.13	16	5.27	-	-	227	4.29	-	-
Boxboard---------------------------	342	3.94	31	3.98	85	3.56	71	4.14	21	4.54	101	3.87	-	-
Beatermen 5/-------------------------	2,429	3.78	388	3.54	474	3.43	395	4.11	87	4.24	788	3.79	203	4.46
Fine grades------------------------	1,101	3.76	281	3.47	200	3.56	66	4.08	-	-	427	3.82	95	4.45
Boxboard---------------------------	546	3.48	44	3.51	118	3.25	117	3.66	31	4.02	170	3.53	-	-
Hydrapulper operators 5/-------------	1,790	3.67	236	3.38	343	3.50	284	3.47	55	3.65	604	3.77	202	4.35
Fine grades------------------------	520	3.69	69	3.23	125	3.54	36	3.25	-	-	216	3.88	50	4.15
Boxboard---------------------------	489	3.44	27	3.46	144	3.39	70	3.31	-	-	175	3.45	30	4.38
Machine room:														
Paper-machine tenders 5/-------------	4,694	4.95	803	4.38	944	4.37	796	5.30	264	5.80	1,284	4.84	480	6.33
Fine grades------------------------	1,895	4.80	484	4.40	427	4.41	134	5.05	36	6.20	619	4.84	147	6.30
Coarse (kraft)---------------------	444	5.49	-	-	-	-	124	5.80	-	-	106	4.64	104	6.28
Boxboard---------------------------	541	4.61	49	4.18	105	4.09	124	4.99	46	5.47	150	4.39	35	5.70
Back tenders 5/----------------------	4,659	4.50	832	3.98	958	4.01	768	4.83	266	5.29	1,237	4.40	475	5.74
Fine grades------------------------	1,903	4.35	507	4.00	442	4.04	129	4.64	36	5.58	594	4.37	147	5.68
Coarse (kraft)---------------------	450	5.01	-	-	-	-	122	5.32	86	5.10	106	4.24	104	5.71
Boxboard---------------------------	531	4.17	49	3.75	108	3.69	122	4.59	45	5.08	143	3.93	32	5.11
Third hands 5/-----------------------	4,356	4.14	669	3.70	849	3.64	718	4.57	259	4.78	1,273	4.05	456	5.04
Fine grades------------------------	1,746	3.99	402	3.74	422	3.66	92	4.46	28	4.86	614	4.06	140	4.94
Coarse (kraft)---------------------	440	4.57	-	-	-	-	121	4.91	85	4.68	106	3.90	104	5.01
Boxboard---------------------------	528	3.86	49	3.53	93	3.50	123	4.27	46	4.59	144	3.67	32	4.61
Fourth hands 5/----------------------	3,760	3.88	615	3.45	614	3.53	659	4.18	263	4.24	1,111	3.83	424	4.49
Fine grades------------------------	1,496	3.78	356	3.50	305	3.53	82	4.11	28	4.34	577	3.84	140	4.45
Coarse (kraft)---------------------	414	4.16	-	-	-	-	120	4.36	85	4.20	83	3.72	100	4.50
Boxboard---------------------------	626	3.57	65	3.29	130	3.39	171	3.69	51	4.00	160	3.54	20	4.38
Fifth hands 5/-----------------------	2,747	3.75	385	3.43	370	3.50	656	3.85	246	3.97	627	3.77	328	4.29
Fine grades------------------------	922	3.75	208	3.51	205	3.56	81	3.95	28	3.95	284	3.80	104	4.25
Coarse (kraft)---------------------	352	3.94	-	-	-	-	121	3.97	80	3.90	55	3.53	80	4.35
Boxboard---------------------------	535	3.28	33	3.24	96	3.06	192	3.38	38	4.10	73	3.53	17	4.18
Finishing, roll:														
Calender operators-------------------	843	4.27	213	4.00	112	4.10	53	4.49	-	-	368	4.30	34	5.14
Calender helpers---------------------	807	3.79	179	3.60	104	3.64	64	3.79	-	-	368	3.87	28	4.44
Coater operators---------------------	590	4.26	188	3.95	60	3.95	41	4.66	29	4.80	255	4.38	17	5.09
Coater operator helpers--------------	523	3.85	-	-	52	3.54	47	4.15	-	-	269	3.90	-	-
Rewinder operators-------------------	2,559	3.90	375	3.70	620	3.70	345	3.82	95	4.14	900	4.02	174	4.36
Rewinder helpers---------------------	1,586	3.62	300	3.49	436	3.40	182	3.67	72	3.87	447	3.74	112	4.05
Finishing, sheet:														
Cutter, guillotine type														
(cut and trim) 5/-------------------	1,381	3.79	184	3.59	199	3.76	297	3.63	39	3.93	552	3.85	83	4.41
Fine grades------------------------	950	3.89	151	3.64	148	3.87	79	3.85	19	4.18	481	3.91	49	4.50
Boxboard---------------------------	224	3.63	21	3.38	40	3.44	89	3.79	12	3.74	47	3.50	11	4.22
Cutters, rotary or sheet 5/----------	1,776	3.92	244	3.52	203	3.74	398	4.09	50	4.26	699	3.88	134	4.52
Fine grades------------------------	1,258	3.92	157	3.50	190	3.77	-	-	31	4.38	542	4.00	104	4.52
Boxboard---------------------------	220	3.78	-	-	-	-	50	4.35	-	-	105	3.44	-	-

APPENDIX D-3 (cont'd)

NUMBER AND AVERAGE STRAIGHT-TIME HOURLY EARNINGS[1] OF PRODUCTION AND RELATED WORKERS IN PULP, PAPER, AND PAPERBOARD MILLS, UNITED STATES AND SELECTED REGIONS,[2] NOVEMBER 1972

Item	United States 3/		New England		Middle Atlantic		Southeast		Southwest		Great Lakes		Pacific	
	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings	Number of workers	Average hourly earnings
Paper and paperboard--continued														
Laboratory:														
Paper testers 5/	2,459	$3.91	331	$3.43	353	$3.63	603	$4.00	221	$4.04	624	$3.92	257	$4.54
Fine grades	1,018	3.85	219	3.50	184	3.71	87	3.95	35	4.15	374	3.93	78	4.53
Boxboard	307	3.92	24	3.40	-	-	132	4.04	51	3.86	59	3.74	-	-
Miscellaneous														
Electricians, maintenance	3,603	4.93	450	4.34	397	4.44	1,018	5.11	280	5.25	868	4.68	488	5.68
Firemen, stationary boiler	1,676	4.18	303	3.89	312	3.76	313	4.49	65	4.66	487	4.09	147	5.15
Janitors	1,980	3.50	196	3.12	297	3.31	476	3.52	71	3.44	679	3.55	225	3.97
Machinists, maintenance	1,682	4.82	255	4.26	213	4.43	439	5.05	114	5.13	387	4.59	229	5.68
Mechanics, general	2,665	5.30	306	4.33	247	4.11	980	5.77	715	5.74	211	4.53	56	5.50
Millwrights, pulp and paper	6,826	4.81	943	4.24	672	4.21	1,827	5.09	369	5.11	1,905	4.55	923	5.66
Oilers	1,728	4.08	222	3.67	213	3.56	482	4.26	157	4.33	405	3.96	210	4.67
Pipefitters, maintenance	3,177	4.88	434	4.21	289	4.33	1,013	5.07	259	5.12	654	4.63	411	5.65
Truckers, power	6,651	3.80	730	3.35	916	3.61	1,547	3.83	344	3.83	2,085	3.78	865	4.39
Forklift	4,913	3.77	511	3.32	745	3.63	1,263	3.82	241	3.81	1,451	3.73	603	4.37
Other than forklift	1,738	3.88	219	3.43	171	3.56	284	3.88	103	3.90	634	3.91	262	4.43

1/ Excludes premium pay for overtime and for work on weekends, holidays, and late shifts.

2/ The regions used in this study are defined as follows: New England - Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont; Middle Atlantic - New Jersey, New York, and Pennsylvania; Southeast - Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia; Southwest - Arkansas, Louisiana, Oklahoma, and Texas; Great Lakes - Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin; and Pacific - California, Nevada, Oregon, and Washington. Alaska and Hawaii were not included in the study.

3/ Includes data for regions in addition to those shown separately.

4/ Includes workers in pulp departments of paper and paperboard mills as well as those in separate pulp mills.

5/ Includes data for types of pulp, paper, or paperboard not shown separately.

NOTE: Dashes indicate no data reported or data that do not meet publication criteria.

Calculations based on employment and earnings data indicate a 14% rise in wages in the pulp and paper industry between June 1972 and June 1974.

Source: U.S. Department of Labor, Bureau of Labor Statistics

APPENDIX D-4

SELLING PRICES AND COST OF SALES

Paper Grade	Selling Price (SP) ($/MT)	G&A (% of SP)	Sales Expense (% of SP)	Freight Out $/MT
CONTAINERBOARD				
Linerboard				
Unbleached Kraft	200	2	1.5	20
Jute	195	2	1.5	12
Blended	200	2	1.5	20
Corrugated Medium				
NSSC	190	2.1	1.6	14
Bogus	185	2.2	1.6	12
Blended	190	2.1	1.6	14
GROUNDWOOD PAPER				
Newsprint				
Virgin	240	3	2.25	20
Recycled	235	3	2.25	12
Blended	240	3	2.25	20
Groundwood Printing				
Virgin	310	3.2	4.8	30
Recycled	280	3.6	5.4	20
Blended	310	3.2	4.8	30
TISSUE AND OTHER MACHINE CREPED PAPER				
Toilet/Facial				
Virgin	830	3.5	15	66
Recycled	730	3.5	15	58
Blended	800	3.5	15	66
FOLDING BOXBOARD				
18-Pt. Clay Coated - Recycled	240	1.6	2.6	15
SBS Board - Virgin	330	2	2	30
PRINTING, WRITING AND RELATED				
Bond				
Virgin	500	2.8	4	30
Recycled	450	3.1	4.4	22
Blended	500	2.8	4	30
Book				
Virgin	500	2.8	4	30
Recycled	450	3.1	4.4	22
Blended	500	2.8	4	30

(continued)

APPENDIX D-5

FUEL COSTS

(2nd Quarter, 1974)

Following quotations are realistic spot prices for refined products moving intrastate on Tuesday each week. They may differ from refiners' prices for branded products. They should not be considered as postings.

a. GASOLINE	¢/Gallon
Mid-Continent (Group 3)	
Regular (92 octane)	28.00-30.00
Premium (99 octane)	30.00-32.00
California (rack) Los Angeles:	
Regular (91 octane)	24.50-33.55
Regular (95 octane)	24.70-34.65
Premium (100 octane)	26.00-35.65
Chicago:	
Regular (94 octane)	31.00-36.00
Premium (100 octane)	33.00-38.00
b. KEROSINE, distillate	
Chicago:	
Distillate No. 1	30.00-34.50
Distillate No. 2	29.00-33.50
Gulf Coast (cargoes):	
+Kerosine (42-43)	27.50-29.00
+Distillate No. 2	25.50-28.00
Mid-Continent (Group 3):	
Kerosine (42-44)	22.50-26.75
Diesel oil (58 d.i. & above)	23.00-27.00
Distillate No. 1	22.00-27.50
Distillate No. 2	20.50-26.00
New York Harbor (barges):	
Kerosine (42-44)	27.50-33.75
Distillate No. 2	24.50-27.55
Diesel Fuel (48-52 d.i.)	24.80

c. RESIDUAL FUEL	$/bbl
Mid-Continent (Group 3):	
No. 6 (max 1% S)	9.25
No. 6 (over 1% S)	8.25
Chicago:	
No. 6 (max. 1% S)	13.02
No. 5 (max. 1% S)	13.86
Gulf Coast (cargoes):	
Bunker C fuel (0.5% S)	11.50
New York Harbor (barges)	
No. 6 (max. 0.3% S)	13.39-13.41
No. 5 (0.3% S)	13.59-14.57
California (marine pipeline)	
Bunker C Los Angeles	5.01

APPENDIX D-6

AVERAGE 1972 POWER RATES, BY STATE

(Rates charged by large light and power companies
for commercial and industrial power)

REGION/STATE	¢/kWh
TOTAL UNITED STATES	1.09
NEW ENGLAND	1.72
Maine	1.26
New Hampshire	1.37
Vermont	1.67
Massachusetts	1.88
Rhode Island	1.87
Connecticut	1.74
MIDDLE ATLANTIC	1.43
New York	1.34
New Jersey	1.61
Pennsylvania	1.42
EAST NORTH CENTRAL	1.21
Ohio	1.01
Indiana	1.25
Illinois	1.31
Michigan	1.35
Wisconsin	1.49
WEST NORTH CENTRAL	1.38
Minnesota	1.47
Iowa	1.35
Missouri	1.41
North Dakota	2.03
South Dakota	1.65
Nebraska	1.21
Kansas	1.15
SOUTH ATLANTIC	1.13
Delaware	1.51
Maryland & D.C.	1.42
Virginia	1.16
West Virginia	1.05
North Carolina	1.01
South Carolina	0.88
Georgia	1.08
Florida	1.28
EAST SOUTH CENTRAL	0.83
Kentucky	0.80
Tennessee	0.79
Alabama	0.86
Mississippi	1.09
WEST SOUTH CENTRAL	0.87
Arkansas	0.78
Louisiana	0.84
Oklahoma	1.01
Texas	0.84
MOUNTAIN	0.88
Montana	0.44
Idaho	0.62
Wyoming	1.05
Colorado	1.20
New Mexico	1.15
Arizona	1.21
Utah	1.32
Nevada	0.78
PACIFIC	0.77
Washington	0.32
Oregon	0.46
California	1.07
Alaska	1.84
Hawaii	1.63

SOURCE: Calculated from sales and revenues listed in Statistical Year Book of the Electric Utility Industry for 1972, Edison Electric Institute, pp. 33, 45.

NOTE: Power rates rose 32% between 1972 and the 2nd Quarter of 1974, as calculated from the "Electric Output Statistics" of Edison Electric Institute.

APPENDIX D-7

ADDITIONAL PROCESS ECONOMICS DATA

(Design basis, fixed capital requirements, estimated hourly labor requirements, and curves of operating cost and fixed capital vs. capacity, plus selected factory overhead costs)

Page

Containerboard D-12

Groundwood Papers D-42

Tissue and Other Machine Creped Paper D-67

Folding Boxboard D-88

Printing and Writing Papers D-96

Industrial Packaging, Converting and Miscellaneous D-122

Construction Papers D-147

Market Pulp D-151

Slush Pulp D-177

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TABLE D-7-1

DESIGN BASIS

Functional Group	Containerboard	Process	Kraft pulping/continuous digester
Grade	Unbleached kraft liner	Fiber Furnish	100% virgin fiber (80% softwood, 20% hardwood); 50/50 roundwood/chips
Basis Weight	205 g/m^2 (42 lb/1000 sq ft)	Pulp Yield	Unbleached – 52%
Production	910 MDMT/day; 314,000 MDMT/yr	Mill Location	Southeast
Net Operating Days	345/yr	Boundary Limits	Wood preparation through board making

CAPITAL REQUIREMENTS ($000)

Physical Plant	100,000	
Other Fixed Capital	10,000	
Total Fixed Capital		110,000
Working Capital		11,000
Total Capital Required		121,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	100
Pulping	1,600	105
Power & Steam Generation (incl. recovery and liquor prep.)	1,600	160
Effluent Treatment	–	30
Board Making	4,000	360
Misc. & Auxiliaries	800	95
Total	8,000	850

OPERATING COST* ($/MDMT)

Fiber Furnish	43.8	
Other Raw Materials	3.6	
Total Raw Materials Cost		47.4
Labor + Fringe @ 32% of Hourly Rate	13.2	
Supplies	11.2	
Energy	6.9	
Factory Overhead	4.8	
Total Conversion Costs		36.1
Capital-Related Costs		26.9
● Total Factory Operating Cost		110.4 ($100.2/MDST)
GS&A	7.0	
Freight Out	20.0	
Total Cost of Sales		27.0
● Total Delivered Cost		137.4 ($124.6/MDST)

*Totals may not add due to rounding

TABLE D-7-2

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF LINERBOARD FROM 100% VIRGIN FIBER

Item	Cost ($000)
Site Preparation	1,500
Wood Yard & Wood Preparation	4,400
Cooking, Refining, Screening & Washing	11,300
Evaporation & Oxidation	3,200
Causticizing & Lime Reburning	4,500
Chemical Recovery	7,200
Stock Preparation	1,800
Machine Room	26,600
Steam/Power Generation	8,900
Effluent Treatment	3,700
Other bldgs. & Fire Protection	6,700
TOTAL DIRECT PLANT COST (DPC)	79,800
Engineering, Const. Supervision & Fee @ 25% DPC	20,000
TOTAL PHYSICAL PLANT COST (PPC)	99,800
OTHER FIXED CAPITAL @ 10% PPC	10,000
TOTAL FIXED CAPITAL	109,800
Use	$110 MM

TABLE D-7-3

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF LINERBOARD FROM 100% VIRGIN FIBER

	Men per Shift	Shifts per day	Total
DIRECT LABOR			
Wood Yard and Wood Preparation			
Foreman	1	2	2
Assistant Foreman	1	1	1
Equipment Operator	3	2	6
Drum Barker Operator	1	2	2
Drum Barker Helper	1	2	2
Chipper Operator	1	2	2
Utility (knife grinder)	1	2	2
Material Handling	2	2	4
Sub-Total			22
Pulp Mill			
Foreman - Pulp Mfg.	1	3	4
Foreman - Recovery	1	3	4
Digester Operator	1	3	4
Helper	1	3	4
Brown Stock Washer Operator	1	3	4
Liquor Evap. Operator	1	3	4
Lime Kiln Operator	1	3	4
Causticizer Operator	1	3	4
Helper	2	3	8
Utility	1	3	4
Sub-Total			44
Paper Mill			
Foreman	1	3	4
Stock Prep.	1	3	4
Chemical Pres - Rosin	1	1	1
Machine	7	3	28
Winder & Roll Finishing	3	3	12
Process Engineer	1	1	1
Tester	1	3	4
Shipping	2	3	8
Sub-Total			62
TOTAL DIRECT LABOR			128

TABLE D-7-3 (Cont'd)

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF LINERBOARD FROM 100% VIRGIN FIBER

	Men per Shift	Shifts per Day	Total
INDIRECT LABOR			
Utilities - Steam			
Foreman	1	1	1
Recovery Boiler Operator	1	3	4
Power Boiler Operator	1	3	4
Helper	2	3	8
Water Treatment (Matl. Handling)	1	1	1
Utilities - Power			
Foreman - included w/steam			
Operator	1	3	4
Utilities - Water & Effluent Treatment			
Foreman	1	1	1
Operator, Raw Water	1	3	4
Operator, Waste Treatment	1	3	4
Helper	1	1	1
Sludge Disposal (driver)	2	2	4
Other Allocated			
Receiving	8	1	8
Instrumentation & Oiler	2	1	2
Stores	2	1	2
Gate & Watchman	1	3	4
Shipping & Receiving Foreman	1	1	1
Quality Control	1	1	1
TOTAL INDIRECT LABOR			54

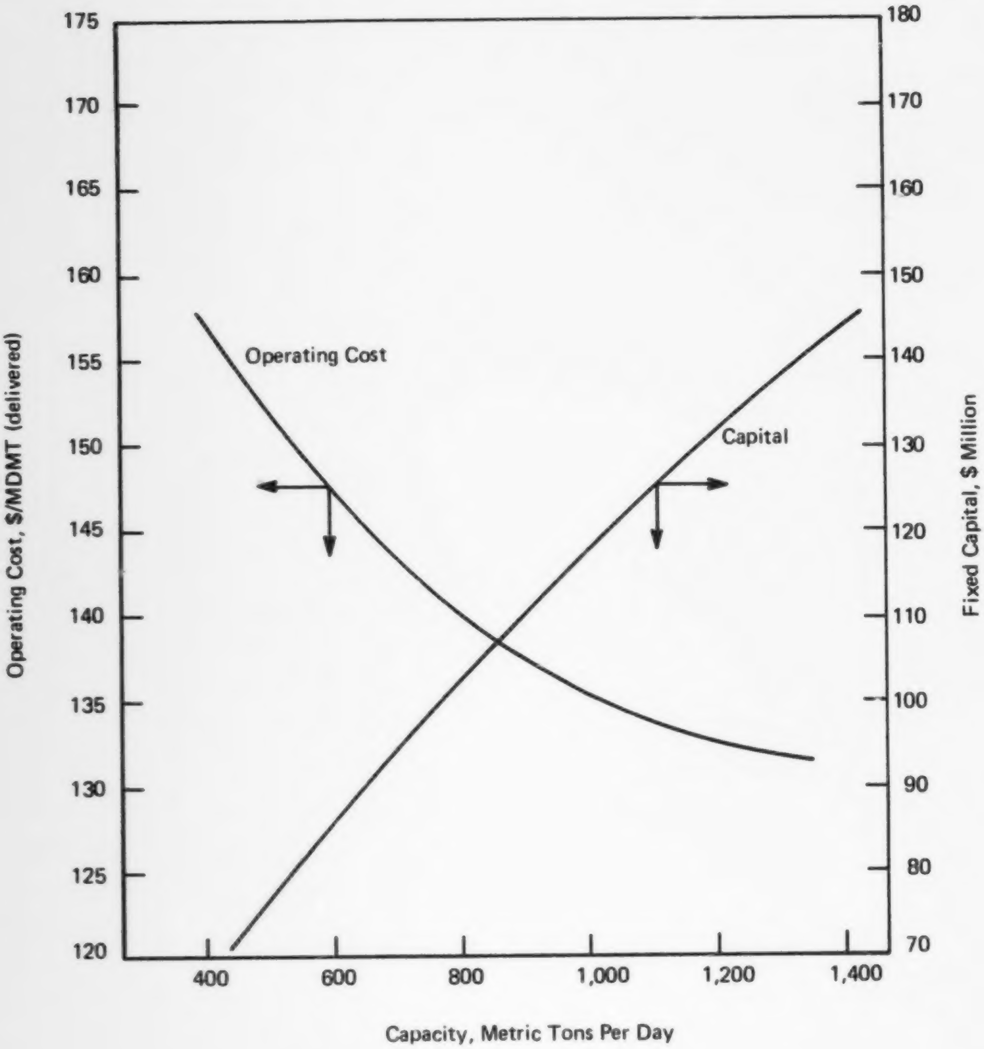

FIGURE D-7-1 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF UNBLEACHED KRAFT LINER

TABLE D - 7 - 4

DESIGN BASIS

Functional Group	Containerboard	Process	S/F pulping
Grade	Jute liner	Fiber Furnish	100% secondary fiber; OCC
Basis Weight	205 g/m^3 (42 lb/1000 sq ft)	Pulp Yield	n.a.
Production	300 MDMT/day; 100,000 MDMT/yr	Mill Location	North Central
Net Operating Days	330/yr	Boundary Limits	S/F preparation through board making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	27,600	
Other Fixed Capital	2,800	
Total Fixed Capital		30,000
Working Capital		4,000
Total Capital Required		34,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
A.D. S/F Plant	1,000	95
Pulping	–	230
Board Making	4,000	80
Effluent Treatment	–	30
Misc. & Auxiliaries	1,000	215
Total	6,000	650

*Totals may not add due to rounding.

OPERATING COST ($/MDMT)

Fiber Furnish	63.3	
Other Raw Materials	12.6	
Total Raw Materials Cost		75.9
Labor + Fringe @ 32% of Hourly Rate	12.9	
Supplies	7.1	
Energy	24.3	
Factory Overhead	6.5	
Total Conversion Costs		50.8
Capital-Related Costs		23.1
● Total Factory Operating Cost		149.8 ($136.5/ MDST)
GS&A	7.0	
Freight Out	12.0	
Total Cost of Sales		19.0
● Total Delivered Cost		168.8 ($153.1/ MDST)

TABLE D-7-5

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF LINERBOARD FROM 100% SECONDARY FIBER

Item	Cost ($000)
Site Preparation	500
A.D. Secondary Fiber Plant	3,000
Pulping	2,400
Board Machine	10,000
Steam/Power Generation	3,400
Water & Effluent Treatment	2,000
Warehouses and other bldgs.	800
TOTAL DIRECT PLANT COST (DPC)	22,100
Engineering, Const. Supervision & Fee @ 25% DPC	5,500
TOTAL PHYSICAL PLANT COST (PPC)	27,600
OTHER FIXED CAPITAL @ 10% PPC	2,800
TOTAL FIXED CAPITAL	30,000
Use	$30 MM

TABLE D-7-6

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF LINERBOARD FROM 100% SECONDARY FIBER

	Men per Shift	Shifts per Day	Total Men
DIRECT LABOR			
A.D. Secondary Fiber Plant			
Foreman	1	1	1
Operator	2	3	8
Stock Preparation			
Foreman	1	1	1
Operator	1	3	4
Materials Handling & makeup Man	1	1	1
Machine Room			
Foreman	1	1	1
Machine tender	1	3	4
Back tender	1	3	4
Third hand	1	3	4
Winder operator/Helper	1	3	4
TOTAL DIRECT			32
INDIRECT LABOR			
Shipping & Receiving Foreman	1	1	1
Shipping crew	3	1	3
Unloading crew	3	1	3
Materials handling (within mill)	2	3	8
Effluent and water treatment	1	3	4
Sludge disposal	1	2	2
Steam/Power plant	2	3	8
Utility	3	1	3
TOTAL INDIRECT			32

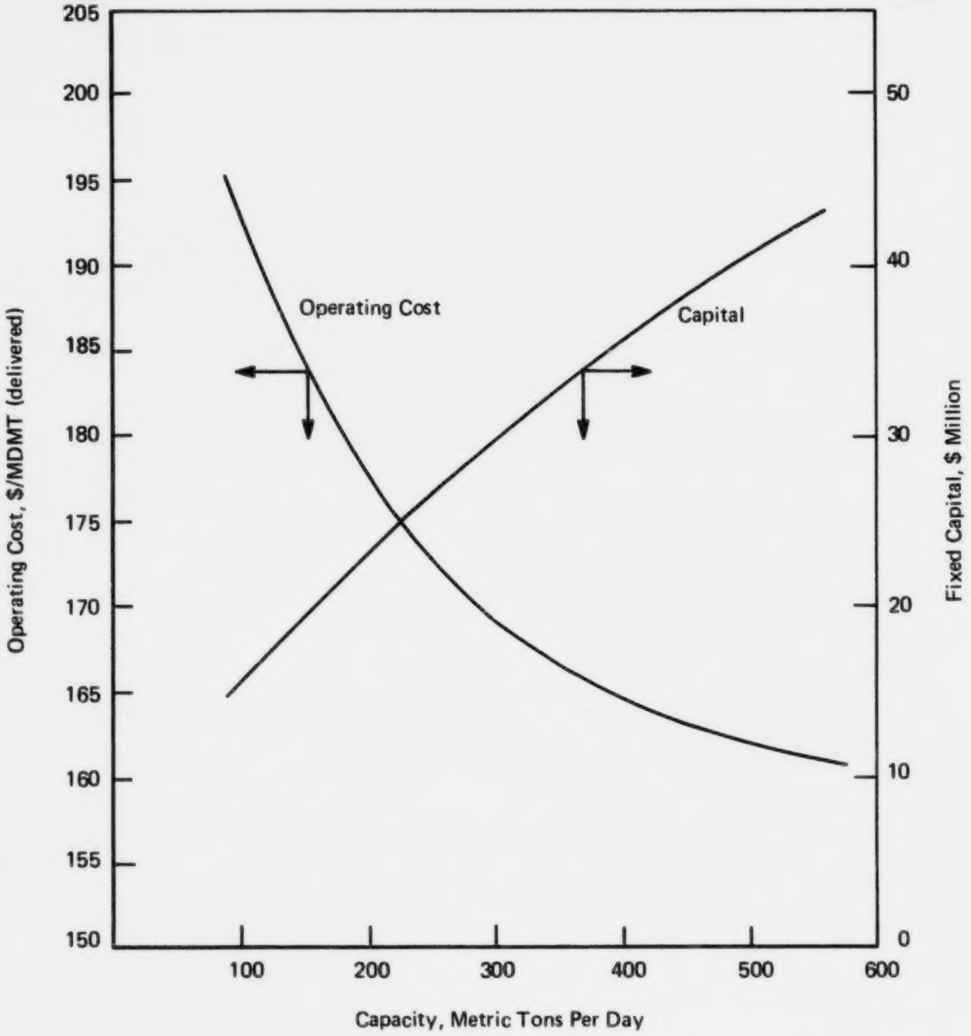

FIGURE D-7-2 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF JUTE LINER

TABLE D-7-7

DESIGN BASIS

Functional Group	Containerboard	Process	Kraft pulping/continuous digester
Grade	Blended linerboard	Fiber Furnish	80% virgin fiber, 20% S/F 50/50 roundwood/chips (64% SW, 16% HW) + 20% OCC
Basis Weight	205 g/m^2 (42 lb/1000 sq ft)	Pulp Yield	Unbleached – 52%
Production	910 MDMT/day; 314,000 MDMT/yr	Mill Location	Southeast
Net Operating Days	345/yr	Boundary Limits	Wood and S/F preparation through board making

CAPITAL REQUIREMENTS
($000)

Physical Plant	96,700	
Other Fixed Capital	9,700	
Total Fixed Capital		106,000
Working Capital		11,000
Total Capital Required		117,000

ENERGY REQUIREMENTS
(per MDMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	80
Pulping	1,300	84
Power & Steam Generation (incl. recovery & liquor preparation)	1,300	136
A.D. Secondary Fiber Plant	200	20
Stock Preparation	–	50
Paper Making	4,000	360
Effluent Treatment	–	30
Misc. & Auxiliaries	800	90
Total	7,600	850

OPERATING COST*
($/MDMT)

Fiber Furnish	47.9		
Other Raw Materials	3.3		
Total Raw Materials Cost		51.3	
Labor + Fringe @ 32% of Hourly Rate	13.2		
Supplies	9.4		
Energy	9.1		
Factory Overhead	4.8		
Total Conversion Costs		36.3	
Capital-Related Costs		25.9	
• Total Factory Operating Cost		113.5	($103.0/ MDST)
GS&A	7.0		
Freight Out	20.0		
Total Cost of Sales		27.0	
• Total Delivered Cost		140.5	($127.5/ MDST)

*Totals may not add due to rounding.

TABLE D-7-8

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF LINERBOARD FROM VIRGIN AND SECONDARY FIBERS (CASE I - 910 TPD)

Item	Cost ($000)
Site Preparation	1,500
Wood Yard & Wood Preparation	3,700
Cooking, Refining, Screening & Washing	9,600
Evaporation & Oxidation	2,700
Causticizing & Lime Reburning	3,800
Chemical Recovery	6,100
A.D. Secondary Fiber System	2,500
Stock Preparation	1,800
Machine Room	26,600
Steam/Power Generation	8,700
Water & Effluent Treatment	3,700
Other Bldgs. and Fire Protection	6,700
TOTAL DIRECT PLANT COST (DPC)	77,400
Engineering, Const. Supervision & Fee @ 25% DPC	19,300
TOTAL PHYSICAL PLANT COST (PPC)	96,700
OTHER FIXED CAPITAL @ 10% PPC	9,700
TOTAL FIXED CAPITAL	106,400
Use	$106 MM

TABLE D-7-9

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF LINERBOARD FROM VIRGIN AND SECONDARY FIBERS (Case I)

Direct Labor	Total Men*
Wood Yard and Wood Preparation	18
Pulp Mill	35
A.D. Secondary Fiber Plant	4
Stock Preparation	4
Machine Room	46
	107
Indirect Labor	
Utilities (steam, power)	20
Utilities, Water & Effluent Treatment	14
Other (including shipping and receiving)	29
	63

*For detailed labor schedule, see kraft linerboard and jute linerboard.

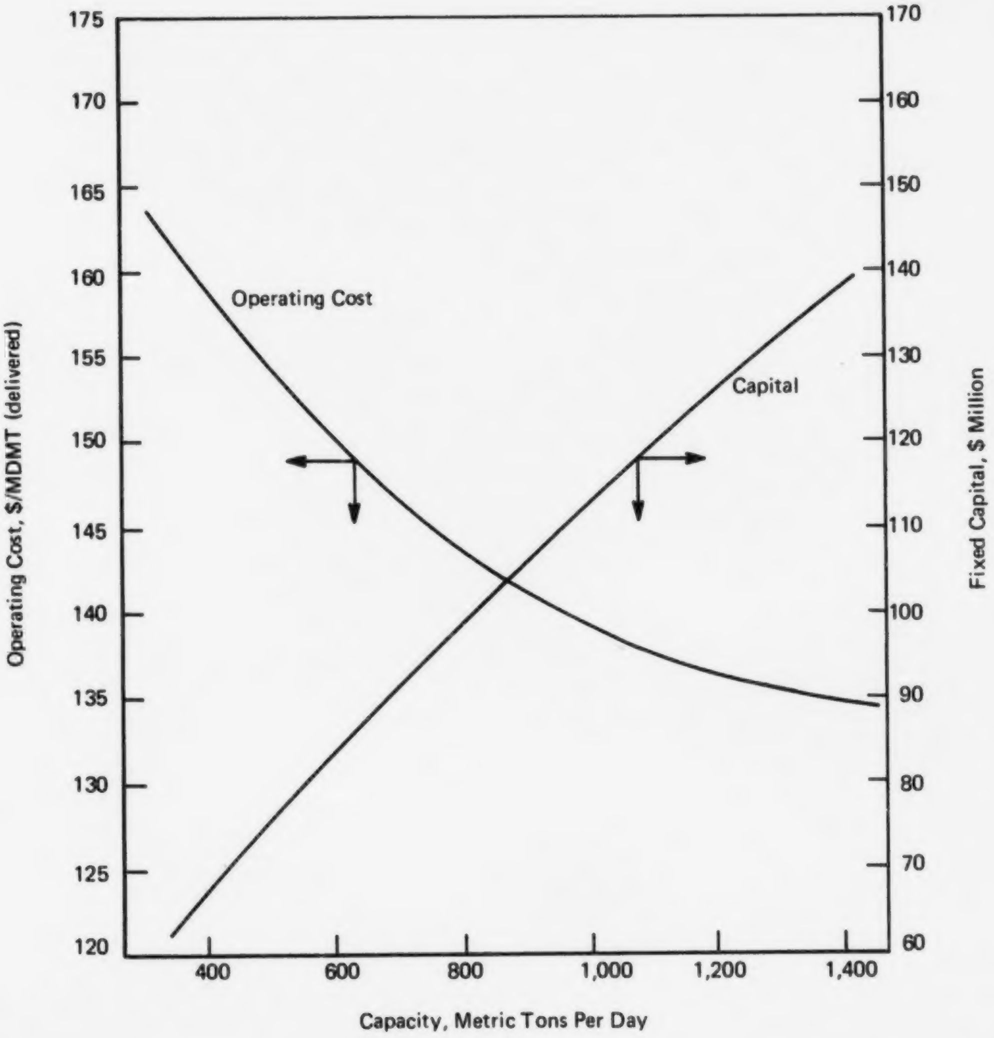

FIGURE D-7-3 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BLENDED LINER (Case I)

TABLE D-7-10

DESIGN BASIS

Functional Group	Containerboard	Process	Kraft pulping/continuous digester
Grade	Blended linerboard	Fiber Furnish	80% virgin fiber, 20% S/F 50/50 roundwood/chips (64% SW, 16% HW) +20% OCC
Basis Weight	205 g/m^2 (42 lb/1000 sq ft)	Pulp Yield	Unbleached – 52%
Production	1140 MDMT/day; 393,000 MDMT/yr	Mill Location	Southeast
Net Operating Days	345/yr	Boundary Limits	Wood and S/F preparation through board making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	108,500	
Other Fixed Capital	10,900	
Total Fixed Capital		119,000
Working Capital		13,000
Total Capital Required		132,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	80
Pulping	1,300	80
Power & Steam Generation (incl. recovery and liquor prep.)	1,300	140
A.D. Secondary Fiber Plant	200	20
Stock Preparation	–	50
Board Making	4,000	360
Effluent Treatment	–	30
Misc. & Auxiliaries	800	90
Total	7,600	850

OPERATING COST* ($/MDMT)

Fiber Furnish	47.9	
Other Raw Materials	3.3	
Total Raw Materials Cost		51.2
Labor + Fringe @ 32% of Hourly Rate	11.8	
Supplies	9.1	
Energy	11.0	
Factory Overhead	4.3	
Total Conversion Costs		35.9
Capital-Related Costs		23.3
● Total Factory Operating Cost		110.4 ($100.2/MDST)
GS&A	7.0	
Freight Out	20.0	
Total Cost of Sales		27.0
● Total Delivered Cost		137.4 ($124.6/MDST)

*Totals may not add due to rounding.

TABLE D-7-11

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF LINERBOARD FROM VIRGIN AND SECONDARY FIBERS (CASE II - 1140 TPD)

Item	Cost ($000)
Site Preparation	1,500
Wood Yard & Wood Preparation	4,400
Cooking, Refining, Screening & Washing	11,300
Evaporation & Oxidation	3,200
Causticizing & Lime Reburning	4,500
Chemical Recovery	7,200
A.D. Secondary Fiber System	3,000
Stock Preparation	2,000
Machine Room	30,800
Steam/Power Generation	9,100
Water & Effluent Treatment	3,700
Other Bldgs. & Fire Protection	6,900
TOTAL DIRECT PLANT COST (DPC)	87,600
Engineering, Const. Supervision & Fee @ 25% DPC	20,900
TOTAL PHYSICAL PLANT COST (PPC)	108,500
OTHER FIXED CAPITAL @ 10% PPC	10,900
TOTAL FIXED CAPITAL	119,400
Use	$119 MM

TABLE D-7-12

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BLENDED LINERBOARD (Case II)

	Men per Shift	Shifts per Day	Total Men
DIRECT LABOR			
Wood Yard and Wood Preparation			
Foreman	1	2	2
Asst. Foreman	1	1	1
Equip. Operator	3	2	6
Drum Barker Operator	1	2	2
Drum Barker Helper	1	2	2
Chipper Operator	1	2	2
Utility (knife grinder)	1	2	2
Material Handling	2	2	4
Sub-Total			22
Pulp Mill			
Foreman - Pulp Mfg.	1	3	4
Foreman - Recovery	1	3	4
Digester Operator	1	3	4
Helper	1	3	4
Brown Stock Washer Operator	1	3	4
Liquor Evap. Operator	1	3	4
Lime Kiln Operator	1	3	4
Causticizer Operator	1	3	4
Helper	2	3	8
Utility	1	3	4
Sub-Total			44
A.D. Secondary Fiber Plant			
Material Handling	2	2	6
Paper Mill			
Foreman	1	3	4
Stock Preparation	1	3	4
Chemical Prep. - Rosin	1	1	1
Machine	7	3	28
Winder & Roll Finishing	3	3	12
Process Engineer	1	1	1
Tester	1	3	4
Shipping	2	3	8
Sub-Total			62
TOTAL DIRECT			134

TABLE D-7-12 (cont'd)

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BLENDED LINERBOARD (Case II)

	Men per Shift	Shifts per Day	Total Men
INDIRECT LABOR			
Utilities - Steam			
Foreman	1	1	1
Recovery Boiler Operator	1	3	4
Power Boiler Operator	1	3	4
Helper	2	3	8
Water Treatment (Matl. Handling)	1	1	1
Utilities - Power			
Foreman - incl. w/steam			
Operator	1	3	4
Utilities - Water & Effluent Treatment			
Foreman	1	1	1
Operator Raw Water	1	3	4
Operator Waste Treatment	1	3	4
Helper	1	1	1
Sludge Disposal (driver)	2	2	4
Other Allocated			
Receiving	10	1	10
Instrumentation and Oiler	2	1	2
Stores	2	1	2
Gate and Watchman	1	3	4
Shipping & Receiving Foreman	1	1	1
Quality Control	1	1	1
TOTAL INDIRECT			56

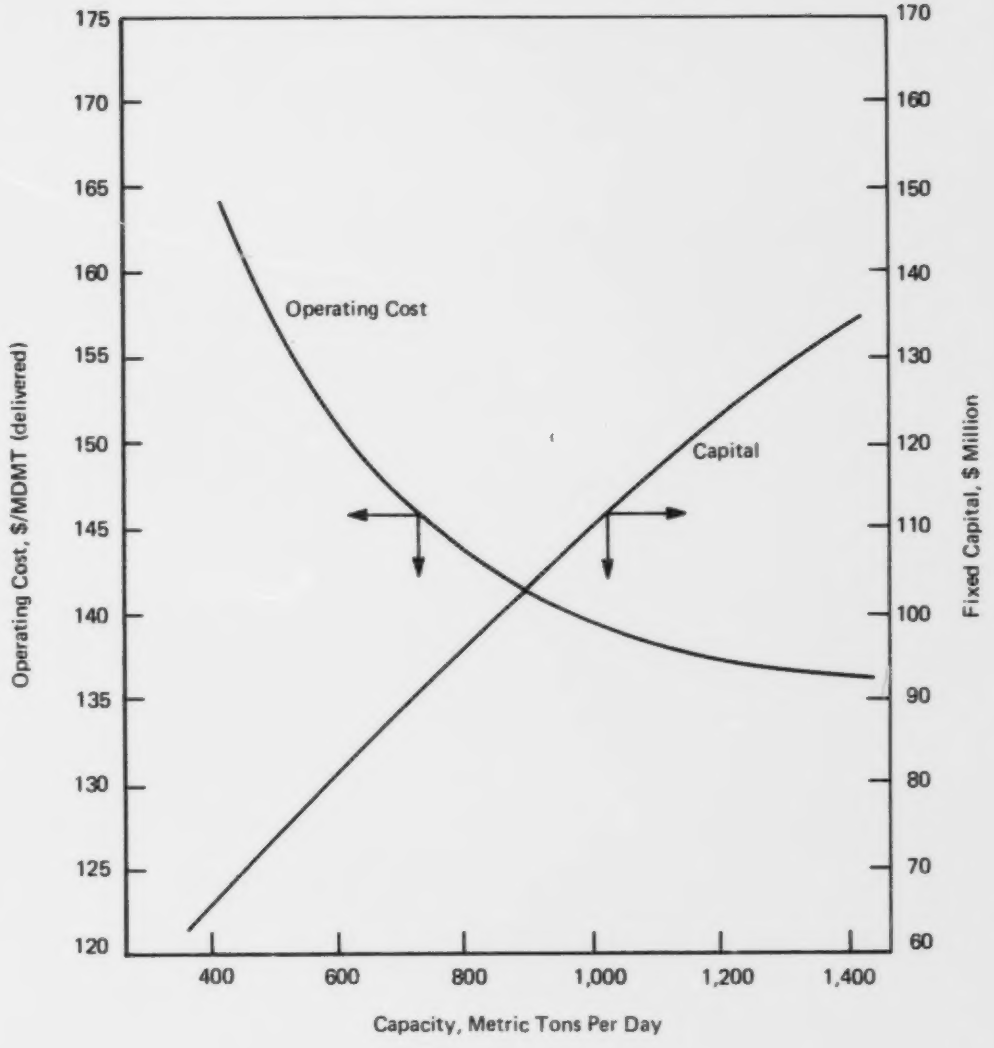

FIGURE D-7-4 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BLENDED LINER (Case II)

TABLE D - 7 - 13

DESIGN BASIS

Functional Group	Containerboard	Process	NSSC pulping, Na base
Grade	NSSC Corrugating Medium	Fiber Furnish	85% virgin, 15% S/F (kraft chippings)
Basis Weight	127 g/m^2 (26 lb/1000 sq ft)	Pulp Yield	Unbleached – 75%
Production	410 MDMT/day; 141,000 MDMT/yr	Mill Location	Southeast
Net Operating Days	345/yr	Boundary Limits	Wood and S/F preparation through paperboard making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	41,000	
Other Fixed Capital	4,100	
Total Fixed Capital		45,000
Working Capital		5,000
Total Capital Required		50,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	100
Pulping	1,000	150
Power & Steam Gen. (incl. recovery & liquor prep.)	1,600	160
Stock Preparation	–	150
Effluent Treatment	–	30
Board Making	4,000	100
Misc. & Auxiliaries	400	110
Total	7,000	800

OPERATING COST* ($/MDMT)

Fiber Furnish	34.9	
Other Raw Materials	14.0	
Total Raw Materials Cost		48.9
Labor + Fringe @ 32% of Hourly Rate	19.3	
Supplies	8.5	
Energy	16.2	
Factory Overhead	8.2	
Total Conversion Costs		52.1
Capital-Related Costs		24.5
• Total Factory Operating Cost		125.4 ($113.7/MDST)
GS&A	7.0	
Freight Out	14.0	
Total Cost of Sales		21.0
• Total Delivered Cost		146.4 ($132.8/MDST)

*Totals may not add due to rounding.

TABLE D-7-14

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF CORRUGATING MEDIUM FROM 85% VIRGIN FIBER, 15% SECONDARY FIBER

Item	Cost ($000)
Site & Wood Preparation	1,400
Cooking, Refining & Washing	2,400
Evaporation & Liquid Preparation	2,200
Combustion System	1,400
Waste Paper System	1,300
Stock Preparation	1,600
Paper Machine	11,000
Steam/Power Generation	6,000
Effluent Treatment	2,900
Warehouse & Other Buildings	2,600
TOTAL DIRECT PLANT COST (DPC)	32,800
Engineering, Const. Supervision & Fee @ 25% DPC	8,200
TOTAL PHYSICAL PLANT COST (PPC)	41,000
OTHER FIXED CAPITAL @ 10% PPC	4,100
TOTAL FIXED CAPITAL	45,100
Use	$45 MM

TABLE D-7-15

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF NSSC CORRUGATING MEDIUM

Direct Labor	Total Men*
Wood Yard and Wood Preparation	12
Pulp Mill and Recovery Plant	28
Deinking and Waste Handling	8
Paper Mill	40
Total Direct	88
Indirect Labor	54

* For detailed labor schedule, see kraft linerboard; reduce the direct labor requirement according to mill size and modify to include the chemical recovery plant and deinking operation

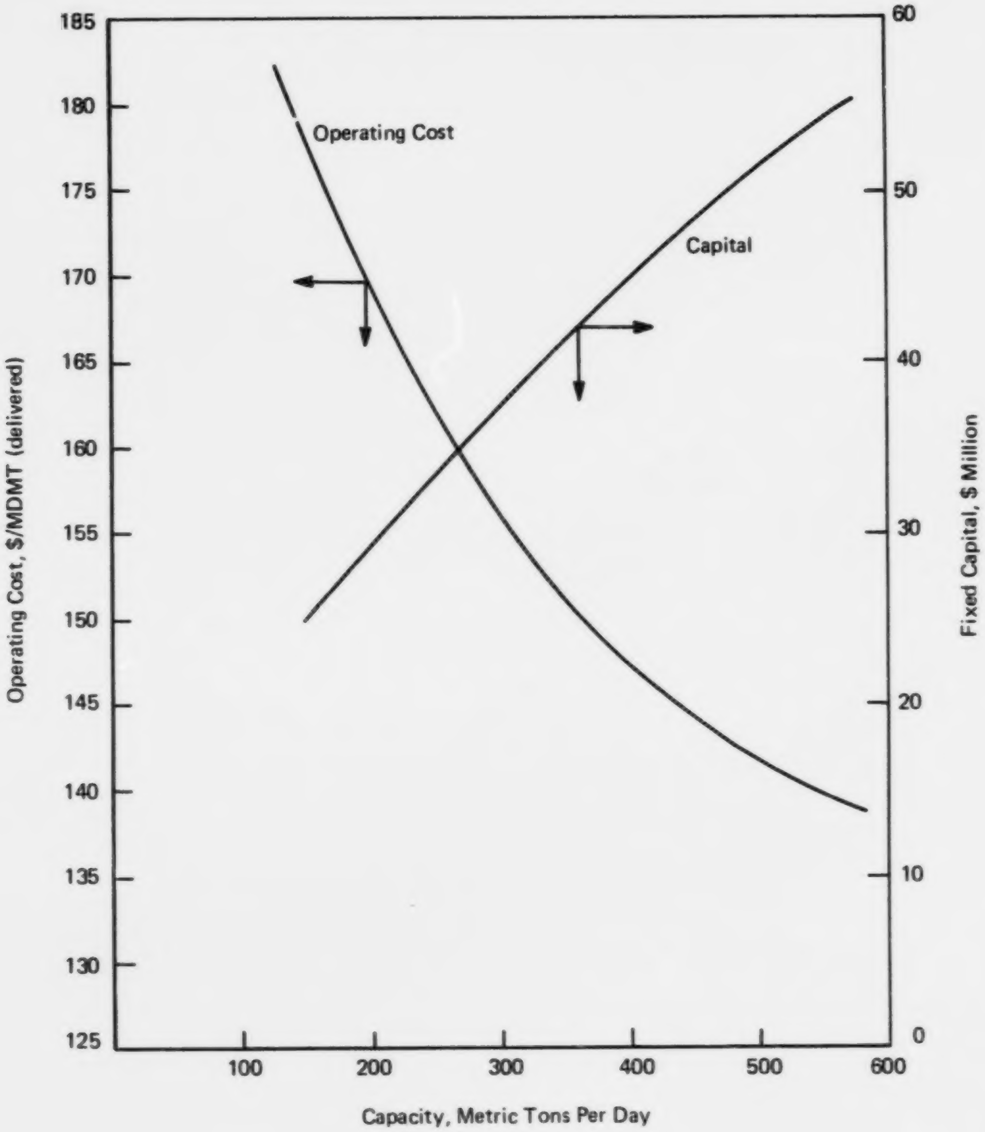

FIGURE D-7-5 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF NSSC CORRUGATING MEDIUM

TABLE D - 7 - 16

DESIGN BASIS

Functional Group	Containerboard	Process	S/F pulping
Grade	Corrugating (bogus) Medium	Fiber Furnish	100% Secondary fiber (OCC)
Basis Weight	127 g/m^2 (26 lb/1000 sq ft)	Pulp Yield	89%
Production	300 MDMT/day; 100,000 MDMT/yr	Mill Location	North Central
Net Operating Days	330/yr	Boundary Limits	S/F preparation through board making

CAPITAL REQUIREMENTS*
($000)

Physical Plant	22,100	
Other Fixed Capital	2,200	
Total Fixed Capital		24,000
Working Capital		4,000
Total Capital Required		28,000

ENERGY REQUIREMENTS
(per MDMT)

	Steam (kg)	Power (kWh)
Pulping	–	230
Board Making	4,000	80
Effluent Treatment	–	30
Misc. & Auxiliaries	600	215
Total	4,600	555

*Totals may not add due to rounding.

OPERATING COST
($/MDMT)

Fiber Furnish	64.9	
Other Raw Materials	3.5	
Total Raw Materials Cost		68.4
Labor + Fringe @ 32% of Hourly Rate	11.2	
Supplies	6.7	
Energy	26.5	
Factory Overhead	6.3	
Total Conversion Costs		50.7
Capital-Related Costs		18.5
• Total Factory Operating Cost		137.6 ($124.8/MDST)
GS&A	7.0	
Freight Out	12.0	
Total Cost of Sales		19.0
• Total Delivered Cost		156.6 ($142.0/MDST)

TABLE D-7-17

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF CORRUGATING MEDIUM FROM 100% SECONDARY FIBER

Item	Cost ($000)
Site Preparation	500
Pulping	2,400
Board Machine	9,200
Steam Generation	2,500
Water & Effluent Treatment	2,000
Warehouses & other bldgs.	1,100
TOTAL DIRECT PLANT COST (DPC)	17,700
Engineering, Const. Supervision & Fee @ 25% DPC	4,400
TOTAL PHYSICAL PLANT COST (PPC)	22,100
OTHER FIXED CAPITAL @ 10% PPC	2,200
TOTAL FIXED CAPITAL	24,300
Use	$24 MM

TABLE D-7-18

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF CORRUGATING MEDIUM FROM 100% SECONDARY FIBER

Direct Labor		Total Men*
Stock Preparation		6
Machine Room		17
	Total Direct	23
Indirect Labor		32

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* For detailed labor schedule, see linerboard from 100% secondary fiber; subtract 9 men for A.D. secondary fiber plant.

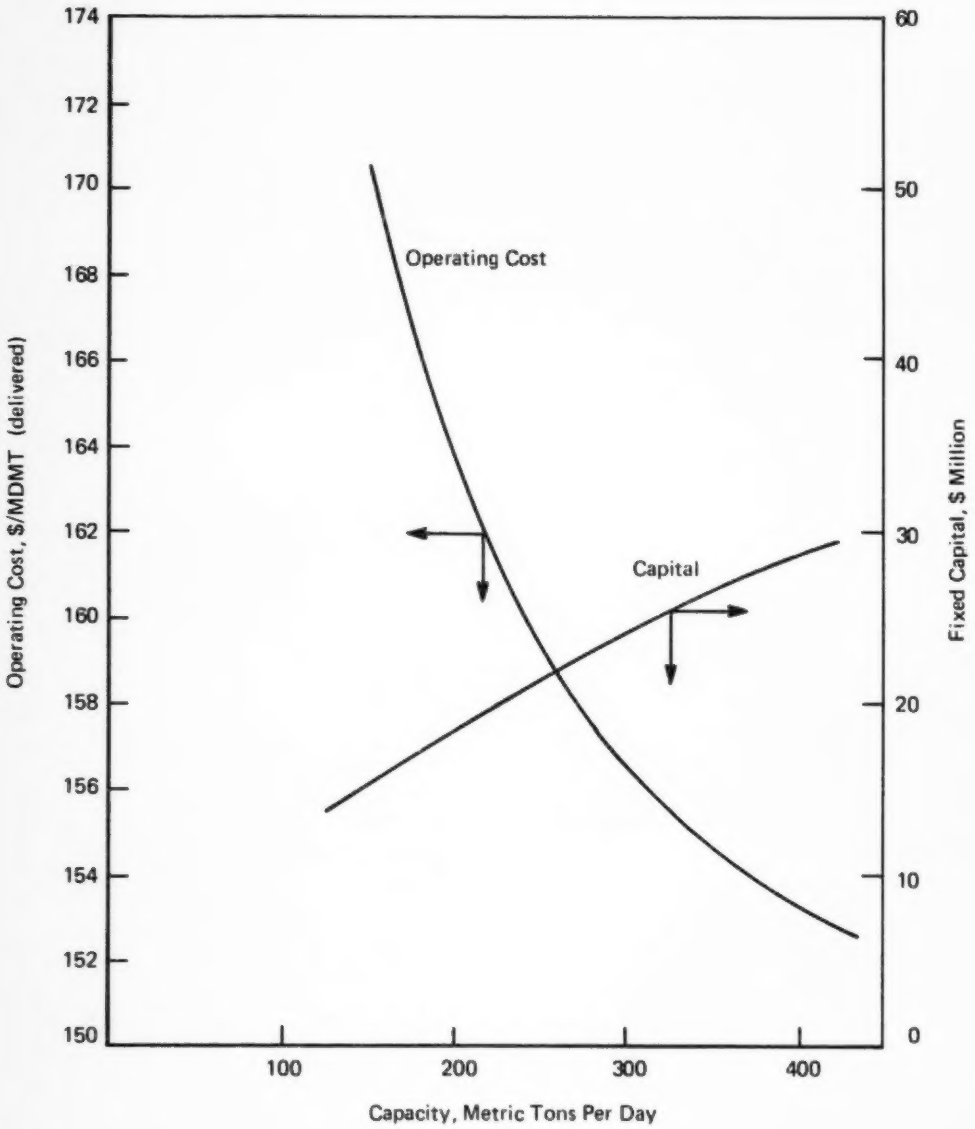

FIGURE D-7-6 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BOGUS MEDIUM

TABLE D-7-19

DESIGN BASIS

Functional Group	Containerboard	Process	NSSC pulping, Na base
Grade	Blended corrugating medium	Fiber Furnish	57% virgin fiber (NSSC), 10% kraft clippings, 33% OCC
Basis Weight	127 g/m^2 (26 lb/1000 sq ft)	Pulp Yield	Unbleached – 75%
Production	410 MDMT/day; 141,000 MDMT/yr	Mill Location	Southeast
Net Operating Days	345/yr	Boundary Limits	Wood & S/F preparation through board making

CAPITAL REQUIREMENTS*
($000)

Physical Plant	39,600	
Other Fixed Capital	4,000	
Total Fixed Capital		44,000
Working Capital		5,000
Total Capital Required		49,000

ENERGY REQUIREMENTS
(per MDMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	70
Pulping (NSSC)	700	100
(S/F)	–	80
Stock Preparation	–	100
Board Making	4,000	100
Steam & Power Gen. (incl. recovery & liquor prep.)	1,200	100
Effluent Treatment	–	30
Misc. & Auxiliaries	500	110
Total	6,400	690

OPERATING COST*
($/MDMT)

Fiber Furnish	44.7		
Other Raw Materials	10.5		
Total Raw Materials Cost		55.2	
Labor + Fringe @ 32% of Hourly Rate	19.4		
Supplies	8.5		
Energy	14.3		
Factory Overhead	8.3		
Total Conversion Costs		50.4	
Capital-Related Costs		23.9	
● Total Factory Operating Cost		129.5	($117.5/MDST)
GS&A	7.0		
Freight Out	14.0		
Total Cost of Sales		21.0	
● Total Delivered Cost		150.5	($136.5/MDST)

*Totals may not add due to rounding.

TABLE D-7-20

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF CORRUGATING MEDIUM FROM 57% VIRGIN FIBER, 43% SECONDARY FIBER

Item	Cost ($000)
Site & Wood Preparation	1,200
Cooking, Refining & Washing	1,900
Evaporation & Liquor Prep.	1,700
Combustion System	1,100
Waste Paper System	2,000
Stock Preparation	1,300
Paper Machine	11,000
Steam/Power Generation	6,000
Effluent Treatment	2,900
Warehouse & Other bldgs.	2,600
TOTAL DIRECT PLANT COST (DPC)	31,700
Engineering, Const. Supervision & Fee @ 25% DPC	7,900
TOTAL PHYSICAL PLANT COST (PPC)	39,600
OTHER FIXED CAPITAL @ 10% PPC	4,000
TOTAL FIXED CAPITAL	43,600
Use	$44 MM

TABLE D-7-21

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF CORRUGATING MEDIUM FROM VIRGIN AND SECONDARY FIBER

Direct Labor	Total Men*
Wood Yard and Wood Preparation	12
Pulp Mill and Recovery Plant	27
Deinking and Waste Handling	10
Paper Mill	40
Total Direct	89
Indirect Labor	54

*For detailed labor schedule, see kraft linerboard except that the direct labor requirement is reduced according to mill size and modified to include the chemical recovery plant and deinking operation.

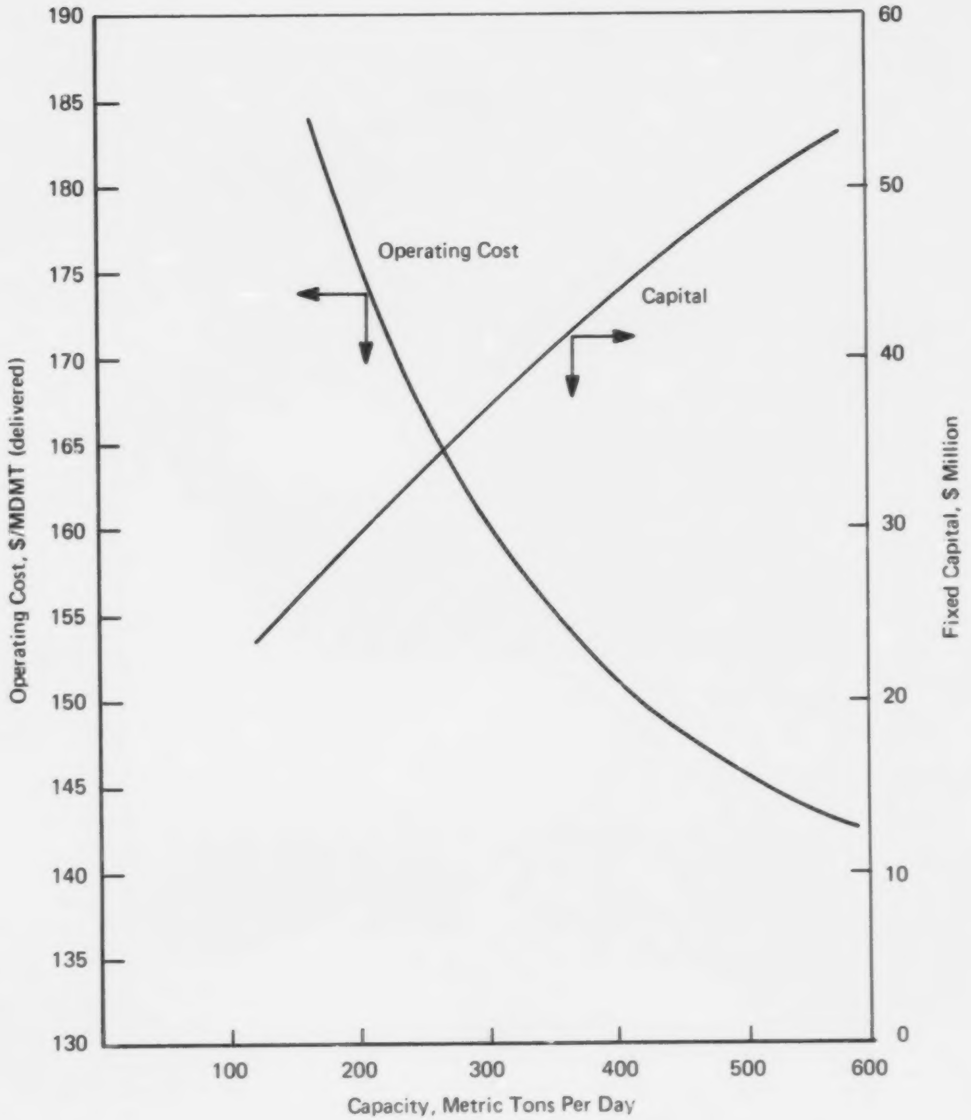

FIGURE D-7-7 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BLENDED MEDIUM

TABLE D-7-22

DESIGN BASIS

Functional Group	Groundwood Papers	Process	Integrated to semi-bleached kraft
Grade	Newsprint	Fiber Furnish	100% virgin (75% groundwood slush pulp, 25% semi-bleached kraft slush pulp)
Basis Weight	49 g/m^2 (30 lb/3000 sq ft)	Pulp Yield	Groundwood – 95%
Production	500 MDMT/day; 170,000 MDMT/yr	Mill Location	Northeast
Net Operating Days	340/yr	Boundary Limits	Wood preparation and transfer of slush pulp to paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	52,700	
Other Fixed Capital	5,300	
Total Fixed Capital		58,000
Working Capital		9,000
Total Capital Required		67,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	120
Paper Making	2,700	200
Effluent Treatment	–	15
Misc., incl. Auxiliaries	450	15
Total	3,150	350

OPERATING COST* ($/MDMT)

Fiber Furnish	105.5	
Other Raw Materials	2.8	
Total Raw Materials Cost		108.4
Labor + Fringe @ 32% of Hourly Rate	10.0	
Supplies	11.2	
Energy	12.9	
Factory Overhead	2.9	
Total Conversion Costs		36.9
Capital-Related Costs		26.2
• Total Factory Operating Cost		171.5 ($155.6/MDST)
GS&A	12.6	
Freight Out	20.0	
Total Cost of Sales		32.6
• Total Delivered Cost		204.1 ($185.2/MDST)

*Totals may not add due to rounding.

TABLE D-7-23

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF NEWSPRINT FROM 100% VIRGIN FIBER

Item	Cost ($000)
Site Preparation	2,200
Stock Preparation	3,000
Paper Machine (incl. roll finishing & winding)	30,000
Steam/Power Generation & Dist.	2,000
Water & Effluent Treatment	2,500
Auxiliary Equipment & bldgs.	2,500
TOTAL DIRECT PLANT COST (DPC)	42,200
Engineering, Const. Supervision & Fee @ 25% DPC	10,500
TOTAL PHYSICAL PLANT COST (PPC)	52,700
OTHER FIXED CAPITAL @ 10% PPC	5,300
TOTAL FIXED CAPITAL	58,000
Use	$58 MM

TABLE D-7-24

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF NEWSPRINT FROM 100% VIRGIN FIBER

	Men per shift	Shifts per day	Total Men
DIRECT LABOR			
Stock Preparation:			
Foreman	1	1	1
Operator	1	3	4
Beater	1	3	4
Make-up Man	1	1	1
Paper Machine:			
Foreman	1	3	4
Machine Tender	1	3	4
Back Tender	1	3	4
Third to Sixth Hands	4	3	16
Roll Finishing & Wrapping	2	3	8
TOTAL DIRECT			46
ALLOCATED INDIRECT LABOR			
Auxiliary:			
Shipping & Receiving Foreman	1	1	1
Shipping & Receiving	4	1	4
Materials Handling	1	3	4
Tester	1	3	3
Steam (Power Plant)	2	3	8
Effluent Treatment	1	2	2
TOTAL INDIRECT			22

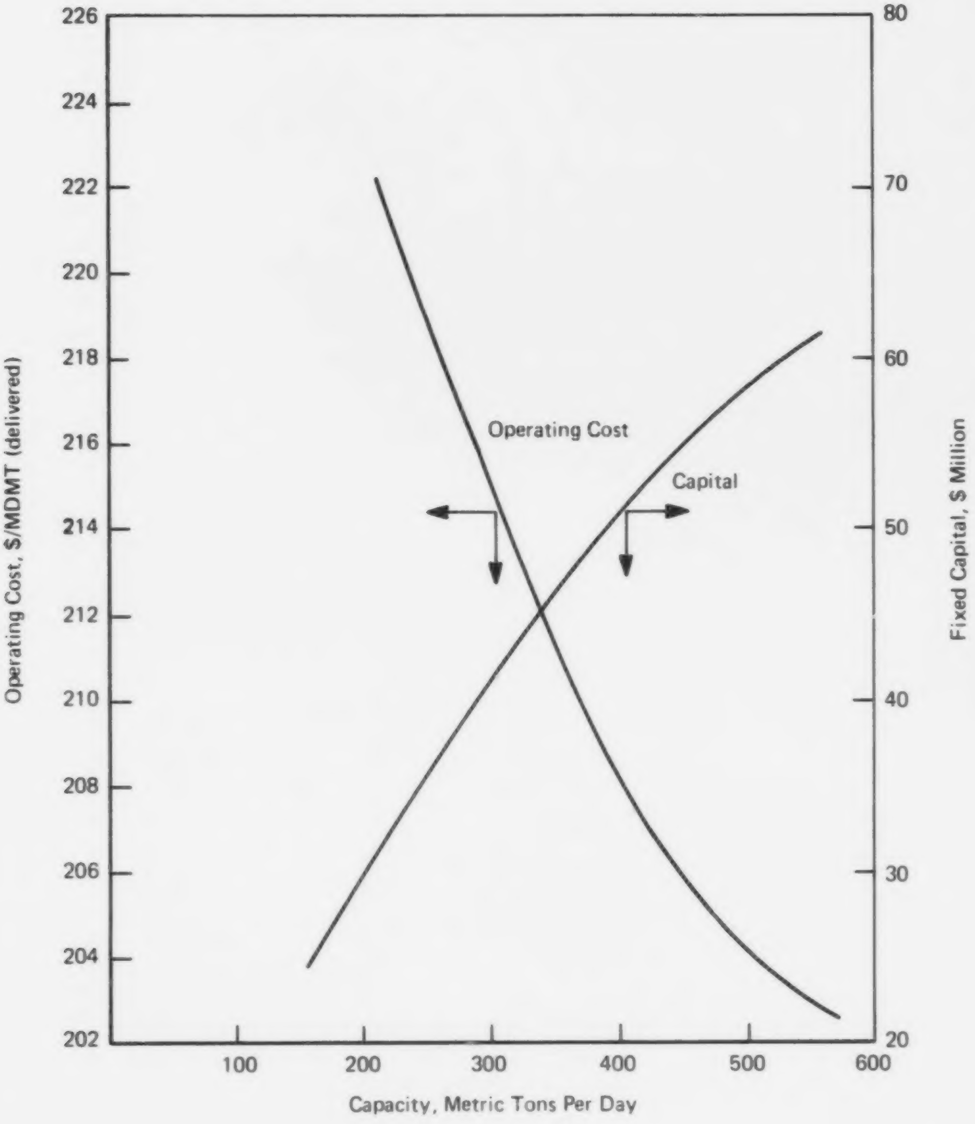

FIGURE D-7-8 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF NEWSPRINT (VIRGIN)

TABLE D - 7 - 25

DESIGN BASIS

Functional Group	Groundwood Papers	Process	S/F pulping and de-inking
Grade	Newsprint	Fiber Furnish	100% old news
Basis Weight	49 g/m^2 (30 lb/3000 sq ft)	Pulp Yield	80% AD S/F to MD paper
Production	300 MDMT/day; 102,000 MDMT/yr	Mill Location	Northeast
Net Operating Days	340/yr	Boundary Limits	S/F preparation through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	36,600	
Other Fixed Capital	3,700	
Total Fixed Capital		40,000
Working Capital		5,000
Total Capital Required		45,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Pulping & De-inking	500	420
Paper Making	2,700	200
Effluent Treatment	–	40
Misc., incl. Auxiliaries	600	40
Total	3,800	700

OPERATING COST* ($/MDMT)

Fiber Furnish	56.3	
Other Raw Materials	9.8	
Total Raw Materials Cost		66.1
Labor + Fringe @ 32% of Hourly Rate	16.4	
Supplies	15.2	
Energy	31.7	
Factory Overhead	9.6	
Total Conversion Costs		72.8
Capital-Related Costs		30.1
● Total Factory Operating Cost		169.0 ($153.3/ MDST)
GS&A	12.6	
Freight Out	12.0	
Total Cost of Sales		24.6
● Total Delivered Cost		193.6 ($175.6/ MDST)

*Totals may not add due to rounding.

TABLE D-7-26

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF NEWSPRINT FROM 100% SECONDARY FIBER

	Cost ($000)		
Item	Bldgs.	Eqpt.	Total
Site Preparation	1,000	-	1,000
De-inking	800	3,600	4,400
Stock Preparation	200	1,200	1,400
Paper Machine (incl. roll finishing & winding)	1,800	12,600	14,400
Steam/Power Generation & Dist.	400	2,700	3,100
Auxiliary Equipment & Buildings	1,600	400	2,000
Water & Effluent Treatment	300	2,700	3,000
TOTAL DIRECT PLANT COST (DPC)	6,100	23,200	29,300
Engineering, Const. Supervision & Fee @ 25% DPC	1,500	5,800	7,300
TOTAL PHYSICAL PLANT COST (PPC)	7,600	29,000	36,600
OTHER FIXED CAPITAL @ 10% PPC			3,700
TOTAL FIXED CAPITAL			40,300
		Use	$40 MM

TABLE D-7-27

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF NEWSPRINT FROM 100% RECYCLED FIBER

	Men per Shift	Shifts per Day	Total Men
DIRECT LABOR			
Deinking:			
Foreman	1	1	1
Pulper	1	3	4
Helper	1	2	2
Screening Operator	1	3	4
Washer Operator	1	3	4
Trash Handling	1	2	2
Stock Preparation:			
Foreman	1	1	1
Operator	1	3	4
Beater	1	3	4
Makeup Man	1	1	1
Paper Machine:			
Foreman	1	1	1
Machine Tender	1	3	4
Back Tender	1	3	4
Third to Fifth Hands	3	3	12
Roll Finishing & Wrapping	1	3	4
TOTAL DIRECT			52
INDIRECT LABOR			
Auxiliary:			
Shipping & Receiving Foreman	1	1	1
Shipping & Receiving	5	1	5
Materials Handling	3	3	12
Utility	5	1	5
Tester	1	3	4
Effluent & Steam Plant	2	3	8
Sludge Disposal	1	2	2
TOTAL INDIRECT			37

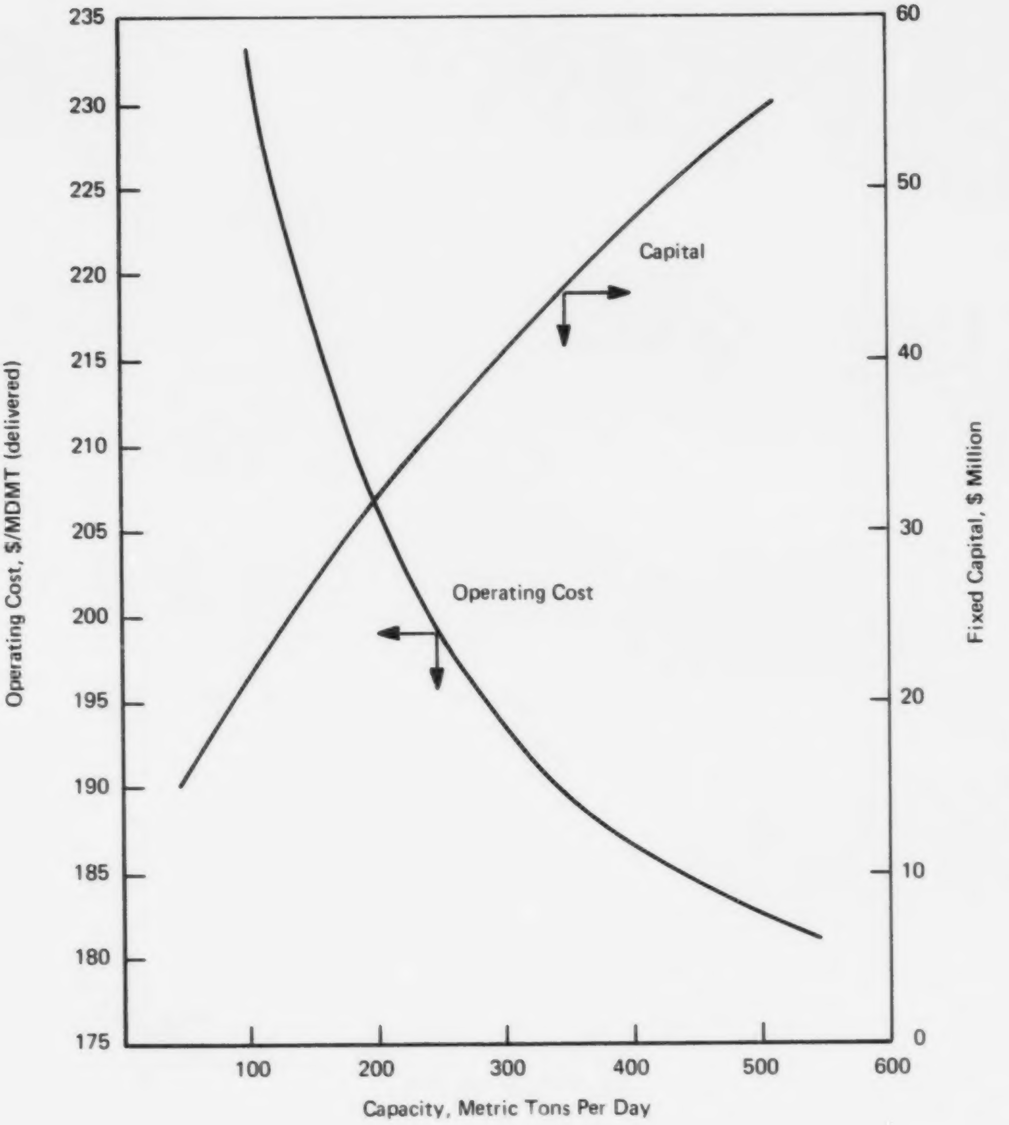

FIGURE D-7-9 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF NEWSPRINT (SECONDARY)

TABLE D - 7 - 28

DESIGN BASIS

Functional Group	Groundwood Papers	Process	Newsprint de-inking, integrated to semi-bleached kraft
Grade	Newsprint	Fiber Furnish	67% Virgin (50% groundwood slush pulp, 17% SBK slush pulp), 33% S/F
Basis Weight	49 g/m^2 (30 lb/3000 sq ft)	Pulp Yield	80% AD S/F to MD paper
Production	500 MDMT/day; 170,000 MDMT/yr	Mill Location	Northeast
Net Operating Days	340/yr	Boundary Limits	S/F preparation and transfer of slush pulp through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	58,500	
Other Fixed Capital	5,900	
Total Fixed Capital		64,000
Working Capital		8,000
Total Capital Required		72,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Pulping & De-inking	175	190
Paper Making	2,700	200
Effluent Treatment	–	15
Misc., incl. Auxiliaries	525	15
Total	3,400	420

OPERATING COST* ($/MDMT)

Fiber Furnish	89.3	
Other Raw Materials	4.9	
Total Raw Materials Cost		94.1
Labor + Fringe @ 32% of Hourly Rate	11.7	
Supplies	11.8	
Energy	16.7	
Factory Overhead	3.9	
Total Conversion Costs		44.2
Capital-Related Costs		28.9
● Total Factory Operating Cost		167.2 ($151.7/ MDST)
GS&A	12.6	
Freight Out	20.0	
Total Cost of Sales		32.6
● Total Delivered Cost		199.8 ($181.3/ MDST)

*Totals may not add due to rounding.

TABLE D-7-29

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF NEWSPRINT FROM VIRGIN AND SECONDARY FIBERS

Item	Cost ($000) Bldgs.	Eqpt.	Total
Site Preparation	2,400	-	2,400
De-Inking	500	2,400	2,900
Stock Preparation	500	2,300	2,800
Paper Machine (incl. roll finishing & winding)	4,900	25,100	30,000
Steam/Power Generation & Dist.	300	2,200	2,500
Water & Effluent Treatment	300	3,200	3,500
Auxiliary Equipment & Bldgs.	2,300	400	2,700
TOTAL DIRECT PLANT COST (DPC)	11,200	35,600	46,800
Engineering, Const. Supervision & Fee @ 25% DPC	2,800	8,900	11,700
TOTAL PHYSICAL PLANT COST (PPC)	14,000	44,500	58,500
OTHER FIXED CAPITAL @ 10% PPC			5,900
TOTAL FIXED CAPITAL			64,400
		Use	$64 MM

TABLE D-7-30

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF NEWSPRINT FROM VIRGIN & SECONDARY FIBERS

Direct Labor	Total Men
Deinking	17
Stock Preparation	10
Paper Machine	36
Total Direct	63
Allocated Indirect Labor	31

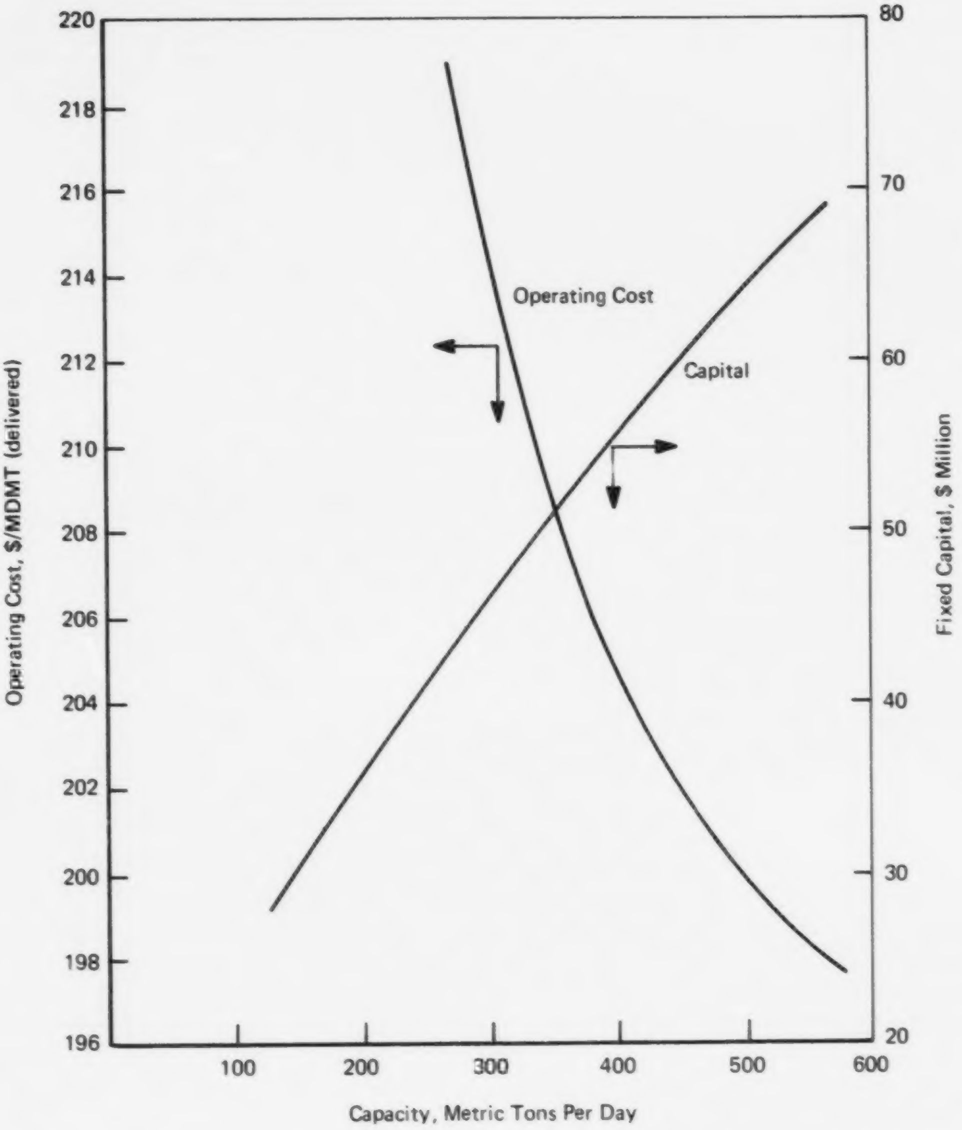

FIGURE D-7-10 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF NEWSPRINT (BLENDED)

TABLE D-7-31

DESIGN BASIS

Functional Group	Groundwood Papers	Process	Integrated to semi-bleached kraft
Grade	Uncoated printing paper	Fiber Furnish	100% Virgin (65% groundwood slush pulp, 35% SBK)
Basis Weight	57 g/m^2 (35 lb/3000 sq ft)	Pulp Yield	n.a.
Production	272 MDMT/day; 90,000 MDMT/yr	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	Transfer of slush pulp through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	34,900	
Other Fixed Capital	4,000	
Total Fixed Capital		38,000
Working Capital		6,000
Total Capital Required		44,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Paper Making	3,600	380
Effluent Treatment	–	20
Misc. & Auxiliaries	600	20
Total	4,400	420

OPERATING COST* ($/MDMT)

Fiber Furnish	97.5	
Other Raw Materials	30.6	
Total Raw Materials Cost		128.2
Labor + Fringe @ 32% of Hourly Rate	14.6	
Supplies	15.3	
Energy	18.6	
Factory Overhead	4.8	
Total Conversion Costs		53.3
Capital-Related Costs		32.4
• Total Factory Operating Cost		214.0 (194.1/ MDST)
GS&A	25.0	
Freight Out	30.0	
Total Cost of Sales		55.0
• Total Delivered Cost		269.0 ($244.0/ MDST)

*Totals may not add due to rounding

TABLD D-7-32

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF UNCOATED PRINTING PAPER FROM 100% VIRGIN FIBER

Item	Cost ($000) Bldgs.	Equip.	Total
Site Preparation	1,500	-	1,500
Stock Preparation	400	1,600	2,000
Paper Machine (incl. size press, roll finishing & winding)	2,800	16,600	19,400
Steam/Power Generation & Dist.	300	1,300	1,600
Water & Effluent Treatment	100	1,700	1,800
Auxiliary Equipment & Bldgs.	1,300	300	1,600
TOTAL DIRECT PLANT COST (DPC)	6,400	21,500	27,900
Engineering, Const. Supervision & Fee @ 25% DPC	1,600	5,400	7,000
TOTAL PHYSICAL PLANT COST (PPC)	8,000	26,900	34,900
OTHER FIXED CAPITAL @ 10% PPC			3,500
TOTAL FIXED CAPITAL			38,400
		Use	$38 MM

TABLE D-7-33

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF UNCOATED GROUNDWOOD PRINTING PAPER FROM 100% VIRGIN FIBER

	Men per Shift	Shifts per Day	Total Men
DIRECT LABOR			
Stock Preparation:			
Foreman	1	1	1
Operator	1	3	4
Beater	1	3	4
Make-up man	1	1	1
Paper Machine:			
Foreman	1	1	1
Machine Tender	1	3	4
Back Tender	1	3	4
Third, Fourth, Fifth hand	3	3	12
Size press	1	3	4
Roll finishing and wrapping	1	3	4
TOTAL DIRECT			39
ALLOCATED INDIRECT LABOR			
Auxiliary			
Shipping and Receiving Foreman	1	1	1
Shipping and Receiving	2	1	2
Materials Handling	1	3	3
Utility	2	1	2
Tester	1	3	4
Steam Plant	1	3	4
Sludge Disposal	1	2	2
TOTAL INDIRECT			18

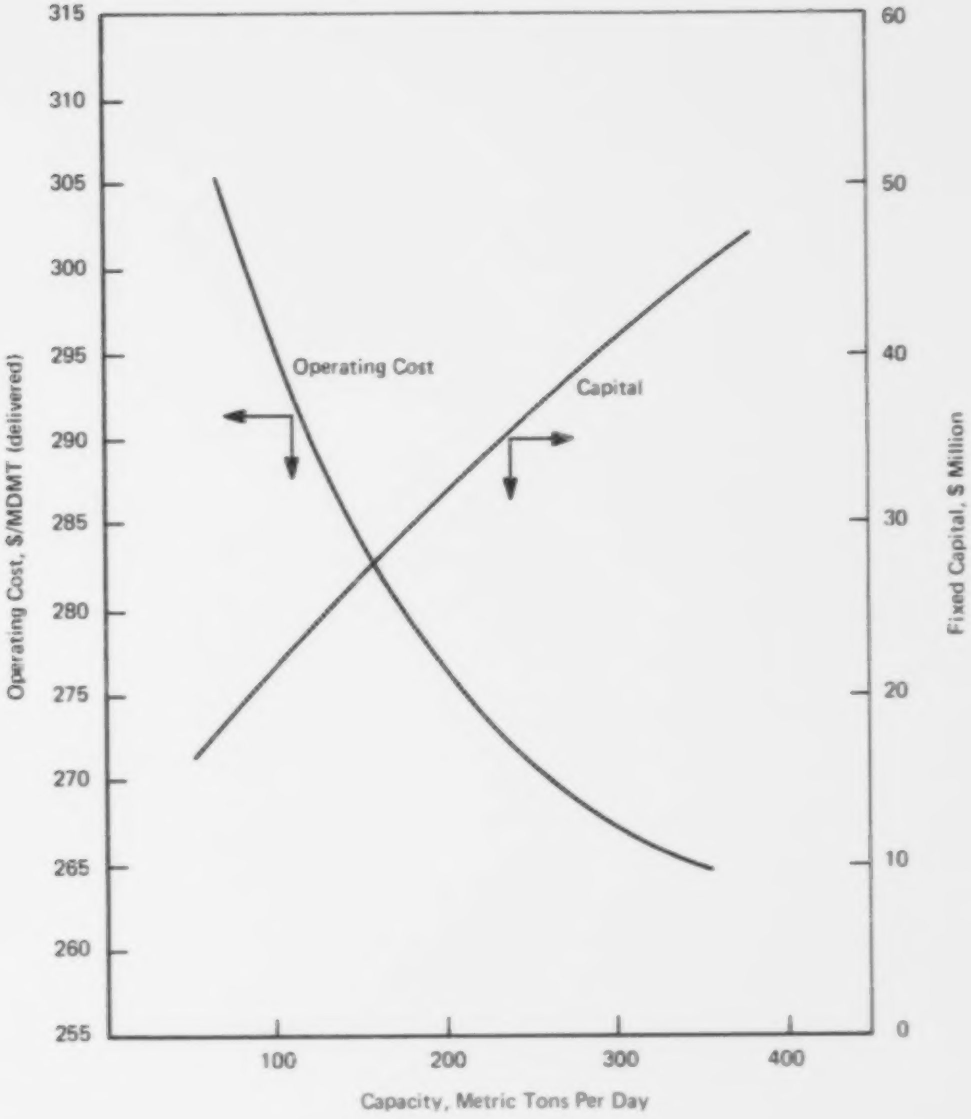

FIGURE D-7-11 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF UNCOATED GROUNDWOOD PRINTING PAPER (VIRGIN)

TABLE D - 7 - 34

DESIGN BASIS

Functional Group	Groundwood Papers	Process	Groundwood Pulping plus SBK market pulp
Grade	Uncoated Printing Paper	Fiber Furnish	100% virgin (65% groundwood slush pulp, 35% market semi-bleached kraft)
Basis Weight	57 g/m^2 (35 lb/3000 sq ft)	Pulp Yield	n.a.
Production	136 MDMT/day; 45,000 MDMT/yr (rolls)	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	Papermaking integrated to groundwood pulping and purchased chemical market pulp

CAPITAL REQUIREMENTS* ($000)

Physical Plant	24,400	
Other Fixed Capital	2,400	
Total Fixed Capital**		27,000
Working Capital		4,000
Total Capital Required**		31,000

ENERGY REQUIREMENTS (per MDMT)

Steam (kg)	Power (kWh)
4,300	610

OPERATING COST ($/MDMT)

Fiber Furnish	149.8	
Other Raw Materials	30.6	
Total Raw Materials Cost		180.4
Labor + Fringe @ 32% of Hourly Rate	27.8	
Supplies	20.6	
Energy	25.1	
Factory Overhead	15.4	
Total Conversion Costs		88.9
Capital-Related Costs		46.0
● Total Factory Operating Cost		315.3 ($286.0/MDST)
GS&A	25.0	
Freight Out	20.0	
Total Cost of Sales		45.0
● Total Delivered Cost		360.3 ($326.8/MDST)

*Totals may not add due to rounding.

**Does not include groundwood pulping capital of $5MM

NOTE: Detailed tabulations of fixed capital and labor requirements are not presented for this model. These requirements were extrapolated from the corresponding data for manufacture of the same product in an integrated mill. Additional fixed capital is needed by a nonintegrated mill, primarily for auxiliary facilities, as it does not benefit from the larger scale and economies obtained by allocating part of the cost of these facilities to an associated pulp mill. With regard to labor requirements, more manpower is needed to handle market pulp than slush pulp.

Similarly, curves showing how operating costs and fixed capital are related to capacity are not included with this model. The shapes of the curves would be the same as for the corresponding integrated mill, but displaced vertically to reflect higher unit costs.

TABLE D - 7 - 35

DESIGN BASIS

Functional Group	Groundwood Papers	Process	S/F pulping and de-inking
Grade	Uncoated printing paper	Fiber Furnish	100% secondary fiber
Basis Weight	57 g/m^2 (35 lb/3000 sq ft)	Pulp Yield	80% AD S/F to MD paper
Production	136 MDMT/day; 45,000 MDMT/yr	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	S/F preparation through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	30,000	
Other Fixed Capital	3,000	
Total Fixed Capital		33,000
Working Capital		4,000
Total Capital Required		37,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Pulping & De-inking	500	430
Paper Making	3,600	250
Effluent Treatment	–	40
Misc. & Auxiliaries	700	40
Total	4,800	760

OPERATING COST* ($/MDMT)

Fiber Furnish	73.2	
Other Raw Materials	36.9	
Total Raw Materials Cost		109.8
Labor + Fringe @ 32% of Hourly Rate	33.1	
Supplies	22.8	
Energy	37.2	
Factory Overhead	20.7	
Total Conversion Costs		113.6
Capital-Related Costs		56.2
● Total Factory Operating Cost		279.6 (253.7/ MDST)
GS&A	25.0	
Freight Out	20.0	
Total Cost of Sales		45.0
● Total Delivered Cost		324.6 ($294.5/ MDST)

*Totals may not add due to rounding

TABLE D-7-36

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF UNCOATED PRINTING PAPER FROM 100% SECONDARY FIBER

Item	Cost ($000)		
	Bldgs.	Equip.	Total
Site Preparation	900	-	900
De-inking	400	2,300	2,700
Stock Preparation	200	800	1,000
Paper Machine (incl. size press, roll finishing & winding)	1,800	11,100	12,900
Steam/Power Generation & Dist.	300	1,700	2,000
Water & Effluent Treatment	200	2,600	2,800
Auxiliary Equipment & Bldgs.	1,400	300	1,700
TOTAL DIRECT PLANT COST (DPC)	5,200	18,800	24,000
Engineering, Const. Supervision & Fee @ 25% DPC	1,300	4,700	6,000
TOTAL PHYSICAL PLANT COST (PPC)	6,500	23,500	30,000
OTHER FIXED CAPITAL @ 10% PPC			3,000
TOTAL FIXED CAPITAL			33,000
		Use	$33 MM

TABLE D-7-37

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF UNCOATED GROUNDWOOD PRINTING PAPERS FROM 100% SECONDARY FIBER

Direct Labor	Total Men*
Deinking	17
Stock Preparation	10
Paper Machine	25
	52
Allocated Indirect Labor	37
Maintenance	23

*For detailed schedule, see uncoated groundwood printing papers from 100% virgin fiber; subtract one machine hand per shift (4 total) and add deinking, same as recycied news.

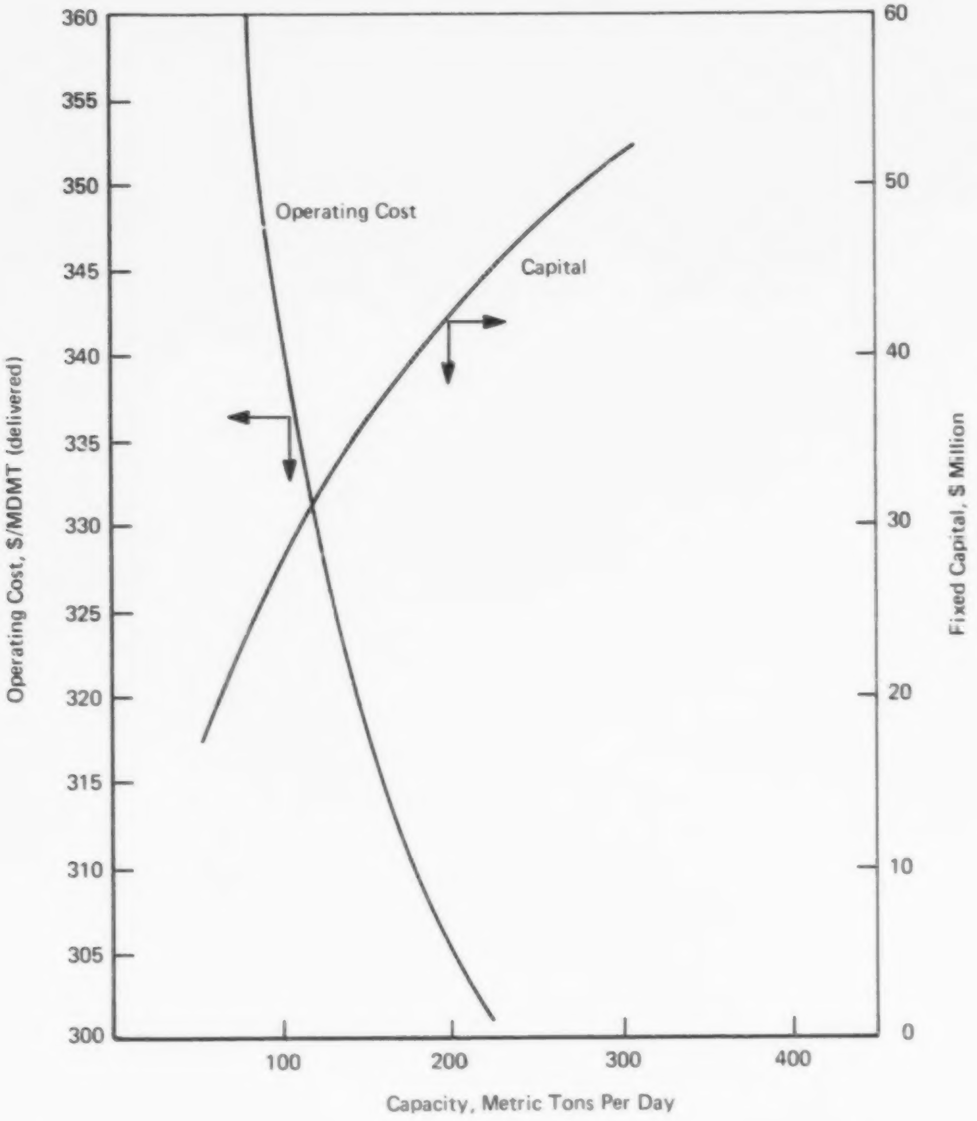

FIGURE D-7-12 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF UNCOATED GROUNDWOOD PRINTING PAPER (SECONDARY)

TABLE D-7-38

DESIGN BASIS

Functional Group	Groundwood Papers	Process	Integrated to semi-bleached kraft
Grade	Uncoated Printing paper	Fiber Furnish	67% Virgin (41% groundwood slush pulp + 26% SBK slush pulp), 33% S/F
Basis Weight	57 g/m^2 (35 lb/3000 sq ft)	Pulp Yield	n.a.
Production	272 MDMT/day; 90,000 MDMT/yr	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	S/F preparation and transfer of slush pulp through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	39,800	
Other Fixed Capital	4,000	
Total Fixed Capital		44,000
Working Capital		6,000
Total Capital Required		50,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Pulping & De-inking	175	230
Paper Making	3,600	250
Effluent Treatment	–	25
Misc. & Auxiliaries	625	25
Total	4,400	530

OPERATING COST* ($/MDMT)

Fiber Furnish	82.4	
Other Raw Materials	30.6	
Total Raw Materials Cost		113.1
Labor + Fringe @ 32% of Hourly Rate	18.4	
Supplies	16.7	
Energy	21.3	
Factory Overhead	6.3	
Total Conversion Costs		62.9
Capital-Related Costs		37.6
● Total Factory Operating Cost		213.6 ($193.8/ MDST)
GS&A	25.0	
Freight Out	30.0	
Total Cost of Sales		55.0
● Total Delivered Cost		268.6 ($243.7/ MDST)

*Totals may not add due to rounding

TABLD D-7-39

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF UNCOATED PRINTING PAPER FROM VIRGIN AND SECONDARY FIBERS

	Cost ($000)		
Item	Bldgs.	Equip.	Total
Site Preparation	1,600	-	1,600
De-inking	300	1,800	2,100
Stock Preparation	400	1,600	2,000
Paper Machine (incl. size press, & roll finishing)	2,800	16,600	19,400
Steam/Power Generation & Dist.	300	1,700	2,000
Water & Effluent Treatment	300	2,400	2,700
Auxiliary Equipment & Bldgs.	1,700	300	2,000
TOTAL DIRECT PLANT COST (DPC)	7,400	24,400	31,800
Engineering, Const. Supervision & Fee @ 25% DPC	1,900	6,100	8,000
TOTAL PHYSICAL PLANT COST (PPC)	9,300	30,500	39,800
OTHER FIXED CAPITAL @ 10% PPC			4,000
TOTAL FIXED CAPITAL			43,800
		Use	$44 MM

TABLE D-7-40

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF UNCOATED GROUNDWOOD PRINTING PAPER FROM VIRGIN AND SECONDARY FIBERS

Direct Labor	Total Men
Deinking: same as 100% recycled less 2	15
Stock Prep: same as 100% virgin	10
Paper Machine: same as 100% virgin	29
	54
Allocated Indirect Labor	22

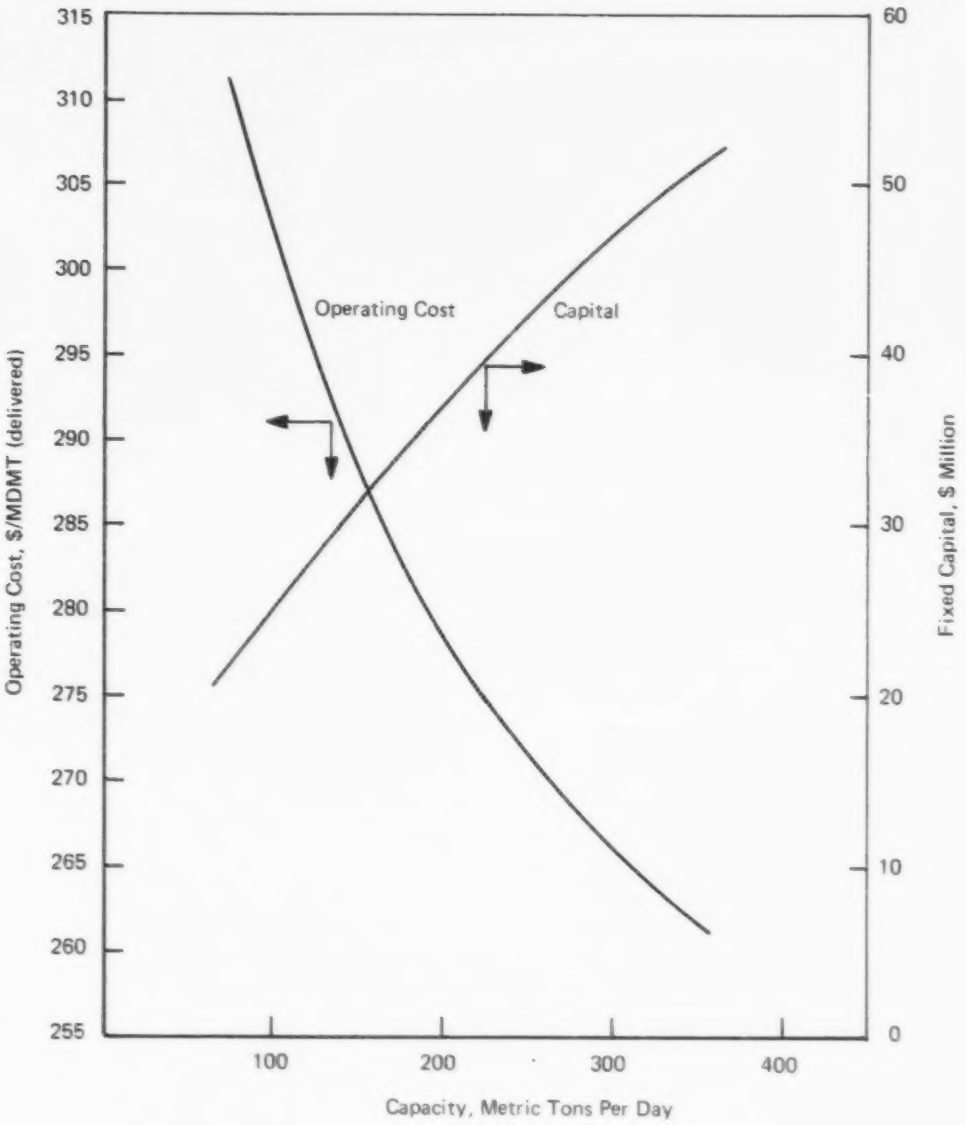

FIGURE D-7-13 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF UNCOATED GROUNDWOOD PRINTING PAPER (BLENDED)

TABLE D - 7 - 41

DESIGN BASIS

Functional Group	Tissue & Other Machine Creped Paper	Net Operating Days Process	330/yr Integrated to bl. kraft
Grade	60% boxed facial tissue, 40% roll toilet tissue	Fiber Furnish	100% virgin bl. kraft slush pulp (50% SW, 50% HW)
Basis Weight	n.a.	Pulp Yield	n.a.
Production			
Jumbo Rolls	136 MDMT/day; 45,000 MDMT/yr	Mill Location	Northeast
Converted & Pkgd.	150 MDMT/day; 49,500 MDMT/yr	Boundary Limits	Transfer of slush pulp through production of converted tissue products

CAPITAL REQUIREMENTS*
($000)

	Jumbo Roll		Converted & Pkgd.		Total	
Physical Plant	20,000		31,300		51,300	
Other Fixed Capital	2,000		3,100		5,100	
Total Fixed Capital		22,000		34,000		56,000
Working Capital		2,000		6,000		8,000
Total Capital Required		24,000		40,000		64,000

ENERGY REQUIREMENTS
(per MDMT)

	Steam (kg)	Power (kWh)
Jumbo Rolls		
Stock Preparation	--	150
Paper Making	2,000	150
Effluent Treatment	--	20
Misc. & Auxiliaries	400	20
	2,400	340
Conversion & Packaging		
Converting Misc. & Auxiliaries	1,000	30
Total	3,400	370

*Totals may not add due to rounding.

TABLE D - 7 - 41 (Cont'd.)

OPERATING COST*

	Jumbo Rolls ($/MDMT)		Converting and Packaging ($/MDMT)**	
Fiber Furnish	161.1		231.2	
Other Raw Materials	8.5		n.a	
Total Raw Materials Cost		169.6		231.2
Labor + Fringe @ 32% of Hourly Rate	19.6		34.2	
Supplies	10.5		81.4	
Energy	13.1		5.2	
Factory Overhead	7.8		8.5	
Total Conversion Costs		51.1		129.4
Capital-Related Costs		36.7		18.6
• **Total Factory Operating Cost**		257.3 ($233.4/MDST)		379.2
GS&A			153.6	
Freight Out			66.0	
Total Cost of Sales				219.6
• **Total Delivered Cost**				598.8 ($543.2/MDST)

**Based on gross weight of converted tissue products, including packaging.

TABLE D-7-42

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF TISSUE PAPER FROM 100% VIRGIN FIBER

Item	Cost ($000) Bldgs.	Equip.	Total
Site Preparation	900	-	900
Stock Preparation	200	1,100	1,300
Paper Machine (incl. roll finishing & Winding)	1,600	8,300	9,900
Steam/Power Generation & Dist.	100	700	800
Water & Effluent Treatment	100	1,700	1,800
Auxiliary Equipment & Bldgs.	1,100	200	1,300
TOTAL DIRECT PLANT COST (DPC)	4,000	12,000	16,000
Engineering, Const. Supervision & Fee @ 25% DPC	1,000	3,000	4,000
TOTAL PHYSICAL PLANT COST (PPC)	5,000	15,000	20,000
OTHER FIXED CAPITAL @ 10% PPC			2,000
TOTAL FIXED CAPITAL			22,000
		Use	$22 MM

TABLE D-7-43

ESTIMATED FIXED CAPITAL REQUIREMENT FOR CONVERTING TISSUE PAPER MANUFACTURED FROM 100% VIRGIN FIBER

Item	Cost ($000)
Total Plant Equipment Cost (PEC)	6,000
Mill Building	600
Allocated Auxiliary Facilities (power, steam, etc.)	300
Allocated Plant Site (railway, parking lot, access roads, fences, etc.)	700
Shops and Laboratory	1,400
TOTAL DIRECT PLANT COST (DPC)	9,000
Engineering, Const. Supervision & Fee @ 25% DPC	2,300
TOTAL PHYSICAL PLANT COST (PPC)	11,300
OTHER FIXED CAPITAL @ 10% PPC	1,100
TOTAL FIXED CAPITAL	12,400
Use	$12 MM

TABLE D-7-44

ESTIMATED HOURLY LABOR REQUIREMENTS FOR MANUFACTURE OF TISSUE FROM 100% VIRGIN FIBER

	Men per Shift	Shifts per Day	Total Men
DIRECT LABOR			
Stock Preparation			
Foreman	1	1	1
Operator	1	3	4
Make-up man	1	1	1
Machine Room			
Foreman	1	1	1
Machine tender	1	3	4
Back tender	1	3	4
Third hand	1	3	4
Fourth hand	1	3	4
TOTAL DIRECT LABOR			23
ALLOCATED INDIRECT LABOR			
Auxiliary			
Shipping and Receiving Foreman	1	1	1
Shipping and Receiving	3	1	3
Materials Handling	2	3	8
Effluent and water treatment	1	3	4
Sludge disposal	1	2	2
Steam plant	1	3	4
Utility	5	1	5
TOTAL INDIRECT LABOR			27

TABLE D-7-45

ESTIMATED HOURLY LABOR REQUIREMENTS FOR TISSUE CONVERTING

Basis: Single line converting (64 MDMT/day)*

	Men per Shift	Shifts per day	Total Men
DIRECT LABOR			
Foreman	1	3	3
Box facial converting	9	3	36
Role toilet converting	4	3	16
Printing	2	3	6
Total			61

*For plant producing 136 MDMT/day, labor requirements are doubled.

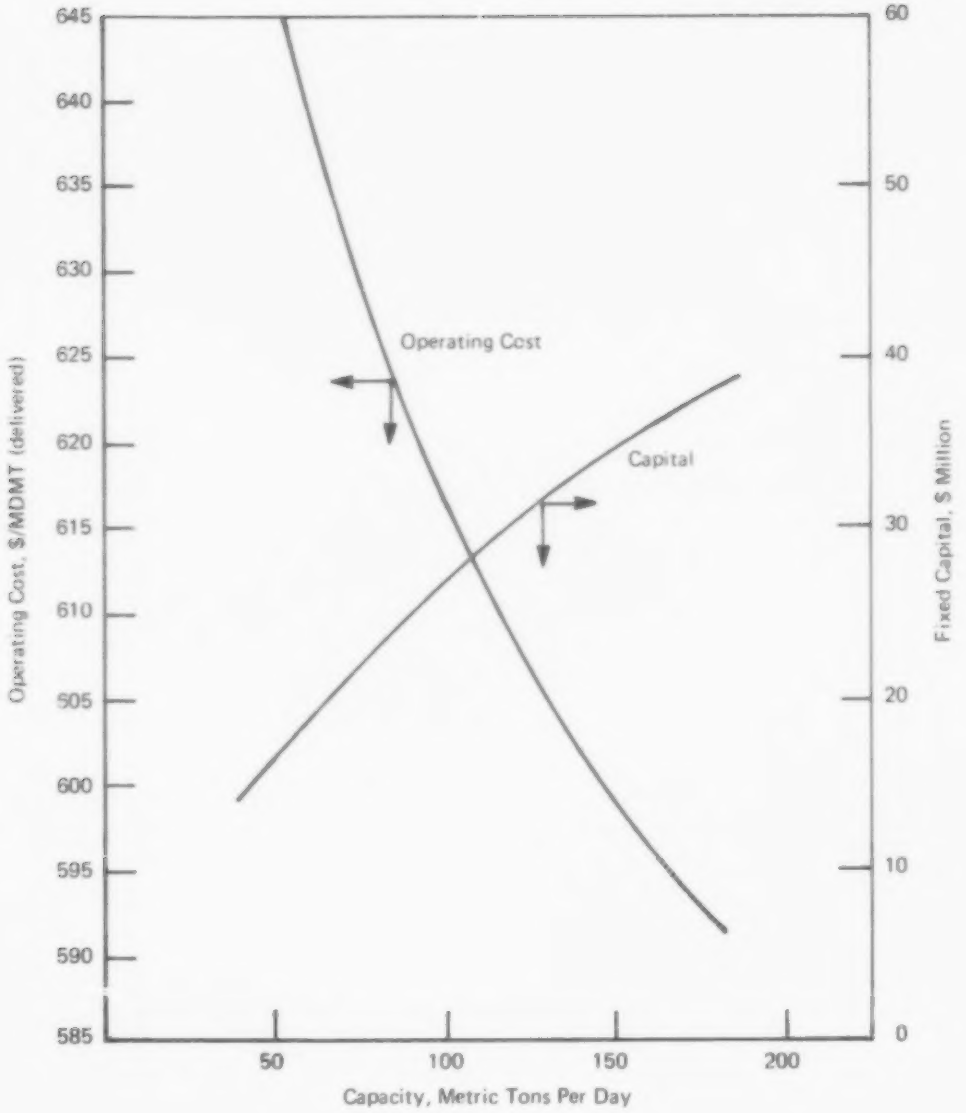

FIGURE D-7-14 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BOX FACIAL AND ROLL TOILET TISSUE (VIRGIN)

TABLE D - 7 - 46

DESIGN BASIS

Functional Group	Tissue & Towelling	Process	Market Pulp
Grade	60% Box Facial; 40% roll toilet tissue	Fiber Furnish	100% virgin (market pulp)
Basis Weight	n.a.	Pulp Yield	n.a.
Production	70 MDMT/day; 23,000 MDMT/yr	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	Nonintegrated; purchased market pulp through converting

CAPITAL REQUIREMENTS*

	Jumbo Rolls	Conv.	Total
Physical Plant	12,000	5,700	17,700
Other Fixed Capital	1,200	600	1,800
Total Fixed Capital	13,000	6,000	19,000
Working Capital			4,000
Total Capital Required			23,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Jumbo Rolls	2,500	520
Converting	1,000	30

OPERATING COST ($/MDMT)

Fiber Furnish	335.4	
Other Raw Materials	8.5	
Total Raw Materials Cost		343.9
Labor + Fringe @ 32% of Hourly Rate	40.9	
Supplies	13.6	
Energy	22.6	
Factory Overhead	24.0	
Total Conversion Costs		101.1
Capital-Related Costs		47.7
● Total Factory Operating Cost		492.7 ($446.8/ MDST)

*Totals may not add due to rounding.

NOTE: Detailed tabulations of fixed capital and labor requirements are not presented for this model. These requirements were extrapolated from the corresponding data for manufacture of the same product in an integrated mill. Additional fixed capital is needed by a nonintegrated mill, primarily for auxiliary facilities, as it does not benefit from the larger scale and economies obtained by allocating part of the cost of these facilities to an associated pulp mill. With regard to labor requirements, more manpower is needed to handle market pulp than slush pulp.

Similarly, curves showing how operating costs and fixed capital are related to capacity are not included with this model. The shapes of the curves would be the same as for the corresponding integrated mill, but displaced vertically to reflect higher unit costs.

TABLE D - 7 - 47

DESIGN BASIS

Functional Group	Tissue & Other Machine Creped Paper	Net Operating Days	330/yr
Grade	60% boxed facial tissue, 40% roll toilet tissue	Process	S/F pulping and de-inking
		Fiber Furnish	100% S/F (40% IBM card stock, 40% ledger, 20% No. 1 news)
Basis Weight	n.a.	Pulp Yield	n.a.
Production			
Jumbo Rolls	64 MDMT/day; 21,000 MDMT/yr	Mill Location	Northeast
Converted & Pkgd.	70 MDMT/day; 23,000 MDMT/yr	Boundary Limits	S/F preparation through production of converted tissue products

CAPITAL REQUIREMENTS*
($000)

	Jumbo Roll		Convert. & Pkg.		Total	
Physical Plant	14,700		5,700		20,400	
Other Fixed Capital	1,500		600		2,100	
Total Fixed Capital		16,000		6,000		22,000
Working Capital		1,000		3,000		4,000
Total Capital Required		17,000		9,000		26,000

ENERGY REQUIREMENTS
(per MDMT)

	Steam (kg)	Power (kWh)
Jumbo Rolls		
De-inking	500	300
Stock Preparation	–	150
Paper Making	2,000	150
Effluent Treatment	–	35
Misc. & Auxiliaries	500	35
Conversion & Packaging		
Converting Misc. & Auxiliaries	1,000	30
Total	4,000	700

*Totals may not add due to rounding.

TABLE D - 7 - 47 (Cont'd.)

OPERATING COST*

	Jumbo Rolls ($/MDMT)		Converting and Packaging ($/MDMT)**	
Fiber Furnish	199.8		357.4	
Other Raw Materials	15.4		–	
Total Raw Materials Cost		215.2		357.4
Labor + Fringe @ 32% of Hourly Rate	48.1		34.2	
Supplies	16.1		81.4	
Energy	27.2		5.2	
Factory Overhead	27.6		8.5	
Total Conversion Costs		119.0		129.4
Capital-Related Costs		58.6		20.0
• **Total Factory Operating Cost**		392.8 ($356.3/MDST)		507.0
GS&A			98.5	
Freight Out			58.4	
Total Cost of Sales				157.0
• **Total Delivered Cost**				663.9 ($602.3/MDST)

**Based on gross weight of converted tissue products, including packaging.

TABLE D-7-48

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF TISSUE PAPER FROM 100% SECONDARY FIBER

	Cost ($000)				
	Bldgs.	Equip.	Total	De-Inking	Papermaking
Site Preparation	600	-	600	-	600
De-Inking	300	1,500	1,800	1,800	-
Stock Preparation & Cleaning	100	500	600	-	600
Paper Machine (incl. roll finishing & winding)	700	4,400	5,100	-	5,100
Steam/Power Generation & Dist.	100	700	800	250	550
Water & Effluent Treatment	100	1,700	1,800	600	1,200
Auxiliary Equipment & Bldgs.	900	200	1,100	250	850
TOTAL DIRECT PLANT COST (DPC)	2,800	9,000	11,800	2,900	8,900
Engineering, Const. Supervision & Fee @ 25% DPC	700	2,200	2,900	700	2,200
TOTAL PHYSICAL PLANT COST (PPC)	3,500	11,200	14,700	3,600	11,100
OTHER FIXED CAPITAL @ 10% PPC			1,500	400	1,100
TOTAL FIXED CAPITAL			16,200	4,000	12,200
		Use	$16 MM	$4 MM	$12 MM

TABLE D-7-49

ESTIMATED FIXED CAPITAL REQUIREMENT FOR CONVERTING TISSUE PAPER MANUFACTURED FROM 100% SECONDARY FIBER

Item	Cost ($000)
Total Plant Equipment Cost (PEC)	3,000
Mill Building	300
Allocated Auxiliary Facilities (power, steam, etc.)	150
Allocated Plant Site (railway, parking area, access roads, fences, etc.)	350
Shops & Laboratory	700
TOTAL DIRECT PLANT COST (DPC)	4,500
Engineering, Const. Supervision & Fee @ 25% DPC	1,200
TOTAL PHYSICAL PLANT COST (PPC)	5,700
OTHER FIXED CAPITAL @ 10% PPC	600
TOTAL FIXED CAPITAL	6,300
Use	$6 MM

TABLE D-7-50

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF TISSUE FROM 100% SECONDARY FIBER

	Men per Shift	Shifts per Day	Total Men
DIRECT LABOR			
Stock Preparation			
Foreman	1	1	1
Operator	1	3	4
Make-up man	1	1	1
Deinking			
Pulper	1	3	4
Helper (material handling)	1	1	1
Screening Operator	1	3	4
Washer Operator	1	3	4
Machine Room			
Foreman	1	1	1
Machine tender	1	3	4
Back tender	1	3	4
Third hand	1	3	4
TOTAL DIRECT LABOR			33
INDIRECT LABOR			
Auxiliary			
Shipping & receiving foreman	1	1	1
Shipping & receiving	3	1	3
Materials handling	2	3	8
Effluent and water treatment	1	3	4
Sludge disposal	1	2	2
Steam plant	1	3	4
Utility	5	1	5
Trash Handling	1	1	1
TOTAL INDIRECT LABOR			28

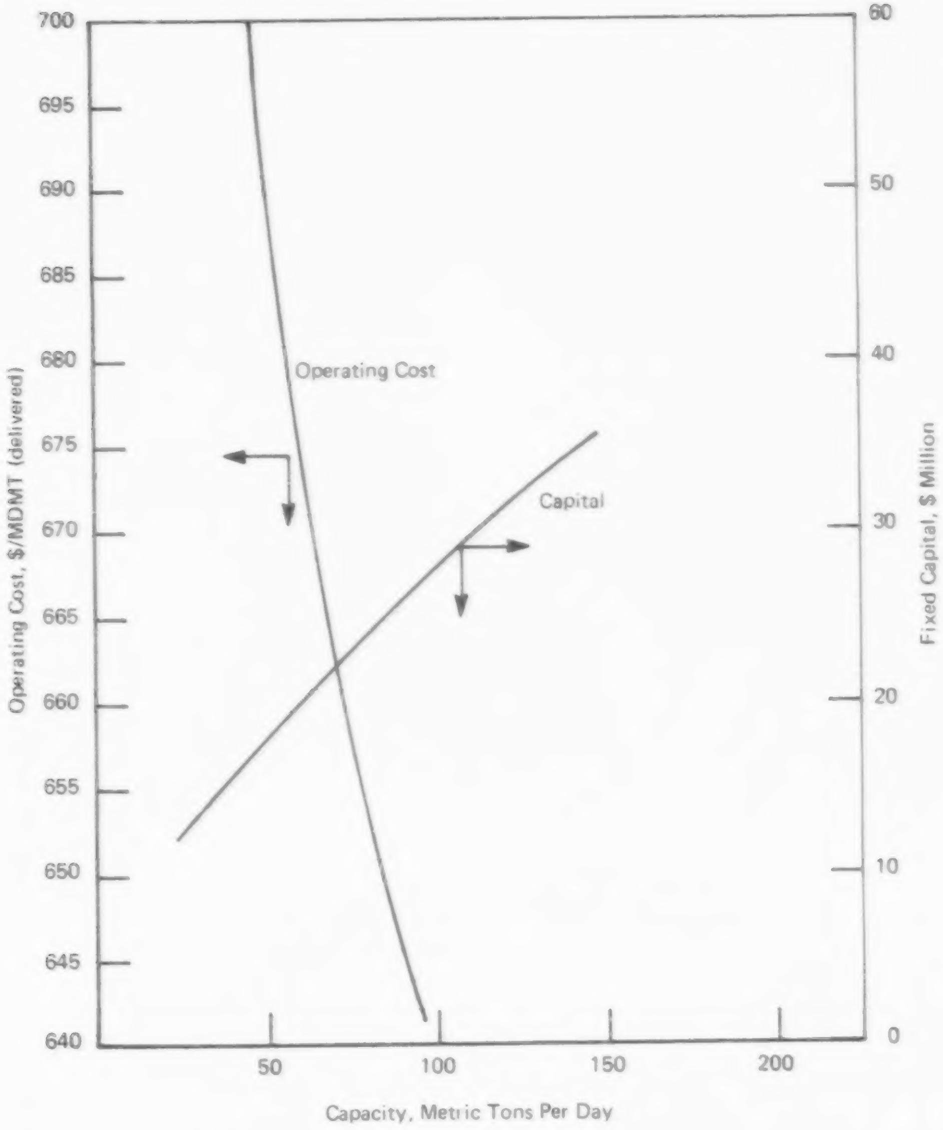

FIGURE D-7-15 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BOX FACIAL AND ROLL TOILET TISSUE (SECONDARY)

TABLE D-7-51

ESTIMATED FACTORY OVERHEAD FOR THE MANUFACTURE OF TISSUE FROM 100% SECONDARY FIBER

(1974 Second Quarter Costs)

Basis: 64 MDMT/Day, 21,000 MDMT/Year, Jumbo Rolls

Position	Salary
Plant Manager	$ 40,000
Secretary	10,000
Production Manager	25,000
Boss Machine Tender	20,000
Production Clerk	10,000
Technical Superintendent & Quality Control Manager	20,000
Mill Chemist	14,000
Plant Engineer, Chief	22,000
Maintenance Superintendent	16,000
Process Engineer	16,000
Technician	8,000
Draftsmen	10,000
Personnel Director & Office Manager	20,000
Chief Accountant	16,000
Purchasing Agent	18,000
Assistant	12,000
Paymaster & Safety Director	14,000
Traffic Controller	12,000
Clerical & Secretarial (6)	36,000
Telephone Operator	6,000
Watchmen (4)	24,000
Sub-total, Direct Salaries	369,000
Fringes @ 15%	55,000
Expenses @ 40%, (travel, entertainment, telephone, postage, subscriptions, dues, contributions)	150,000
TOTAL FACTORY OVERHEAD	574,000
Use	$580,000

TABLE D - 7 - 52

DESIGN BASIS

Functional Group	Tissue & Other Machine Creped Paper	Net Operating Days Process	330/yr Integrated to bl. kraft
Grade	60% boxed facial tissue, 40% roll toilet tissue	Fiber Furnish	67% virgin bl. kraft slush pulp (50% SW, 50% HW), 33% S/F
Basis Weight	n.a.	Pulp Yield	n.a.
Production			
Jumbo Rolls	136 MDMT/day; 45,000 MDMT/yr	Mill Location	Northeast
Converted & Pkgd.	150 MDMT/day; 49,500 MDMT/yr	Boundary Limits	Transfer of slush pulp and S/F preparation through production of converted tissue products

CAPITAL REQUIREMENTS*
($000)

	Jumbo Roll		Converted & Pkgd.		Total	
Physical Plant	22,900		11,300		34,200	
Other Fixed Capital	2,200		1,100		3,300	
Total Fixed Capital		25,000		12,000		37,000
Working Capital		2,000		6,000		8,000
Total Capital Required		27,000		18,000		45,000

ENERGY REQUIREMENTS
(per MDMT)

	Steam (kg)	Power (kWh)
Jumbo Rolls		
De-inking	175	100
Stock Preparation	--	150
Paper Making	2,000	150
Effluent Treatment	--	35
Misc. & Auxiliaries	425	35
	2,600	470
Conversion & Packaging		
Converting Misc. & Auxiliaries	1,000	30
Total	3,600	500

*Totals may not add due to rounding.

TABLE D - 7 - 52 (Cont'd.)

OPERATING COST

	Jumbo Rolls ($/MDMT)		Converting and Packaging ($/MDMT)**	
Fiber Furnish	173.7		260.5	
Other Raw Materials	10.8		n.a.	
Total Raw Materials Cost		184.4		260.5
Labor + Fringe @ 32% of Hourly Rate	24.7		34.2	
Supplies	11.7		81.4	
Energy	15.8		5.2	
Factory Overhead	10.2		8.5	
Total Conversion Costs		62.2		129.4
Capital-Related Costs		42.0		18.6
● **Total Factory Operating Cost**		288.7 ($261.9/MDST)		408.5
GS&A			153.6	
Freight Out			66.0	
Total Cost of Sales				219.6
● **Total Delivered Cost**				628.2 ($569.9/MDST)

**Based on gross weight of converted tissue products, including packaging.

TABLE D-7-53

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF TISSUE PAPER FROM VIRGIN AND SECONDARY FIBERS

Item	COST ($000)				
	Bldgs.	Equip.	Total	De-Inking	Papermaking
Site Preparation	900	-	900	-	900
De-Inking	300	1,200	1,500	1,500	-
Stock Preparation	200	1,100	1,300	-	1,300
Paper Machine (incl. roll finishing & winding)	1,600	8,300	9,900	-	9,900
Steam/Power Generation & Dist.	100	900	1,000	200	800
Water & Effluent Treatment	100	2,200	2,300	500	1,800
Auxiliary Equip. & Bldgs.	1,200	200	1,400	100	1,300
TOTAL DIRECT PLANT COST (DPC)	4,400	13,900	18,300	2,300	16,000
Engineering, Const. Supervision & Fee @ 25% DPC	1,100	3,500	4,600	600	4,000
TOTAL PHYSICAL PLANT COST (PPC)	5,500	17,400	22,900	2,900	20,000
OTHER FIXED CAPITAL @ 10% PPC			2,200	200	2,000
TOTAL FIXED CAPITAL			25,100	3,100	22,000
		Use	$25 MM	$3 MM	$22 MM

TABLE D-7-54

ESTIMATED FIXED CAPITAL REQUIREMENT FOR CONVERTING TISSUE PAPER MANUFACTURED FROM VIRGIN AND SECONDARY FIBERS

Item	Cost ($000)
Total Plant Equipment Cost	6,000
Mill Building	600
Allocated Auxiliary Facilities (power, steam, etc.)	300
Allocated Plant Site (railway, parking area, access roads, fences. etc.)	700
Shops and Laboratory	1,400
TOTAL DIRECT PLANT COST (DPC)	9,000
Engineering, Const. Supervision & Fee @ 25% DPC	2,300
TOTAL PHYSICAL PLANT COST (PPC)	11,300
OTHER FIXED CAPITAL @ 10% PPC	1,100
	12,400
Use	$12 MM

TABLE D-7-55

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF TISSUE FROM 33% S/F, 67% VIRGIN FIBER

Basis: 136 MDMT/Day, 45,000 MDMT/Year, Jumbo Rolls

	Men per Shift	Shifts per Day	Total Men
DIRECT LABOR			
Stock Preparation			
Foreman	1	1	1
Operator	1	3	4
Make-up Man	1	1	1
Deinking			
Pulper	1	3	4
Helper (Material Handling)	1	1	1
Screening Operator	1	3	4
Washer Operator	1	3	4
Trash Handling	1	1	1
Machine Room			
Foreman	1	1	1
Machine Tender	1	3	4
Back Tender	1	3	4
Third Hand	1	3	4
Fourth Hand	1	3	4
TOTAL DIRECT LABOR			36
INDIRECT LABOR			
Auxiliary			
Shipping & Receiving Foreman	1	1	1
Shipping & Receiving	3	1	3
Materials Handling	2	3	8
Effluent & Water Treatment	1	3	4
Sludge Disposal	1	2	2
Steam Plant	1	3	4
Trash Handling	1	1	1
Utility	5	1	5
TOTAL INDIRECT LABOR			28

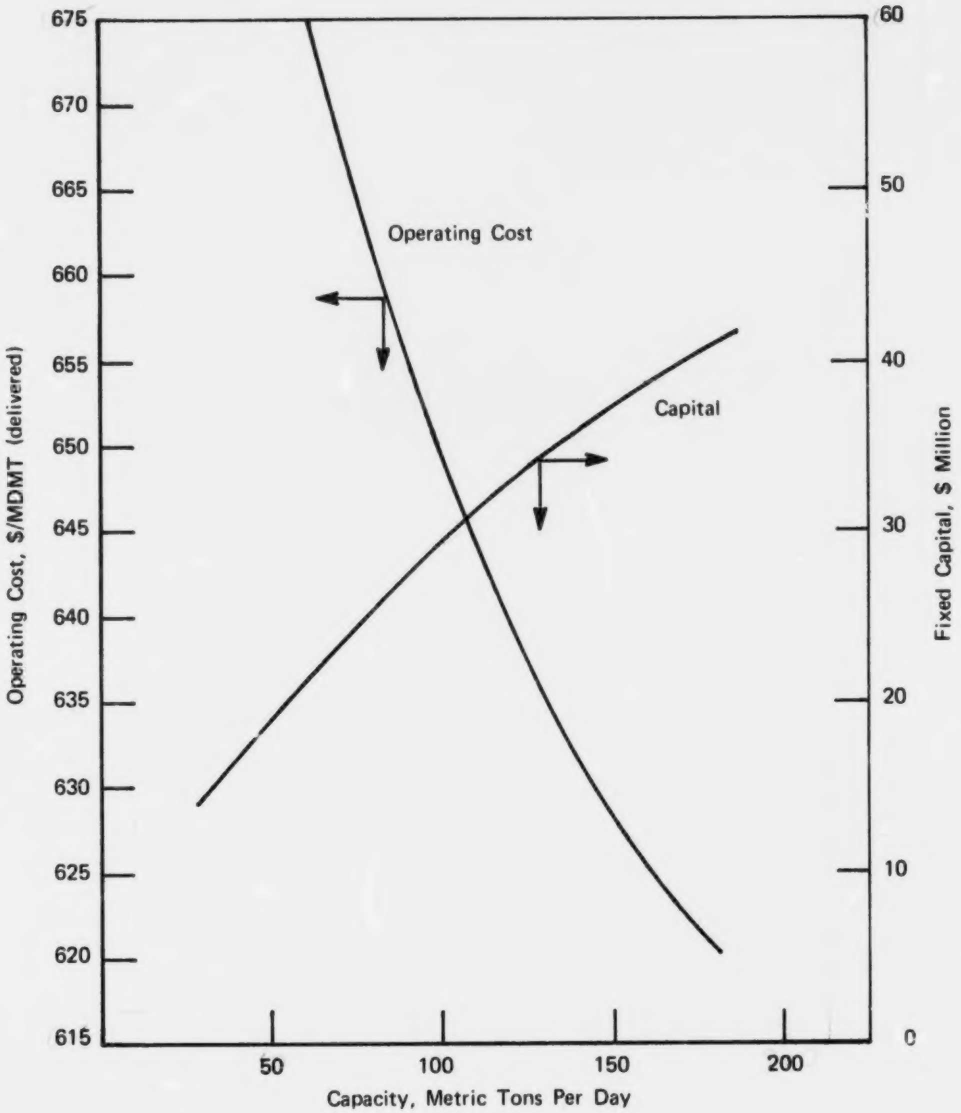

FIGURE D-7-16 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BOX FACIAL AND ROLL TOILET TISSUE (BLENDED)

TABLE D - 7 - 56

DESIGN BASIS

Functional Group	Folding Boxboard	Process	S/F pulping
Grade	18-pt clay coated (50% sheet, 50% roll)	Fiber Furnish	100% S/F (Top liner: ledger; filler liner: 90% news, 20% OCC)
Basis Weight	n.a.	Pulp Yield	n.a.
Production	360 MDMT/day; 119,000 MDMT/yr	Mill Location	North Central
Net Operating Days	330/yr	Boundary Limits	Preparation of secondary fiber to board making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	43,800	
Other Fixed Capital	4,400	
Total Fixed Capital		48,000
Working Capital		6,000
Total Capital Required		54,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Pulping	–	220
Board Making	4,500	220
Effluent Treatment	–	30
Misc. & Auxiliaries	1,000	180
Total	5,500	650

OPERATING COST* ($/MDMT)

Fiber Furnish	66.5	
Other Raw Materials	11.5	
Total Raw Materials Cost		78.0
Labor + Fringe @ 32% of Hourly Rate	20.1	
Supplies	12.3	
Energy	22.4	
Factory Overhead	11.9	
Total Conversion Costs		66.7
Capital-Related Costs		31.0
● Total Factory Operating Cost		175.7 (159.4/MDST)
GS&A	11.9	
Freight Out	15.0	
Total Cost of Sales		26.9
● Total Delivered Cost		202.6 ($183.8/MDST)

*Totals may not add due to rounding.

TABLE D-7-57

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF 18-PT. CLAY-COATED BOXBOARD

Item	Cost ($000)
Site Preparation	1,300
Pulping	7,900
Coating Preparation	1,500
Board Machine (incl. roll & sheet finishing)	14,600
Steam/Power Generation & Dist.	5,200
Water & Effluent Treatment	2,800
Warehouse & Non-Process Buildings	1,700
TOTAL DIRECT PLANT COST (DPC)	35,000
Engineering, Const. Supervision & Fee @ 25% DPC	8,800
TOTAL PHYSICAL PLANT COST (PPC)	43,800
OTHER FIXED CAPITAL @ 10% PPC	4,400
TOTAL FIXED CAPITAL	48,200
Use	$48 MM

TABLE D-7-58

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF 18-POINT CLAY-COATED BOXBOARD

Direct Labor	Total Men
Pulping	24
Machine Crews (less finishing)	36
Finishing	24
Total Direct	84
Indirect Labor	
Shipping and Receiving	20
Steam/Power Plant	6
Effluent Treatment and Misc.	8
Total Indirect	34

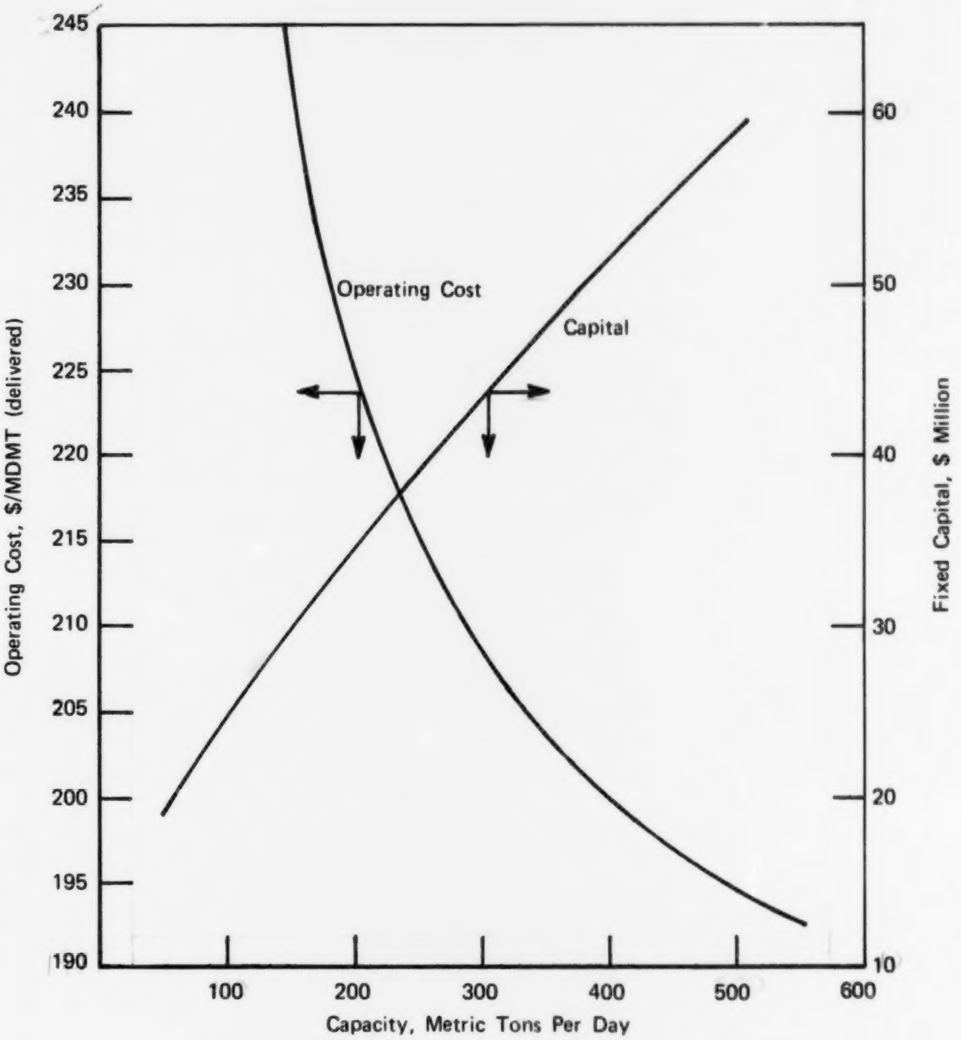

FIGURE D-7-17 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF 18-POINT CLAY-COATED BOXBOARD

TABLE D - 7 - 59

DESIGN BASIS

Functional Group	Folding Boxboard	Process	Integrated to 730 ADMT bl kraft
Grade	SBS Board (bleached foodboard)	Fiber Furnish	Kraft slush pulp (60% bl SW, 40% bl HW)
Basis Weight	293 g/m^2 (180 lb/3000 sq ft)	Pulp Yield	n.a.
Production	450 MDMT/day; 150,000 MDMT/yr	Mill Location	Southeast
Net Operating Days	330/yr	Boundary Limits	Transfer of slush pulp to board making

CAPITAL REQUIREMENTS*
($000)

Physical Plant	35,100	
Other Fixed Capital	3,500	
Total Fixed Capital		39,000
Working Capital		9,000
Total Capital Required		48,000

ENERGY REQUIREMENTS
(per MDMT)

	Steam (kg)	Power (kWh)
Stock Preparation	–	150
Board Making	3,000	150
Effluent Treatment Misc. & Auxiliaries	400	40
Total	3,400	340

OPERATING COST*
($/MDMT)

Fiber Furnish	135.7	
Other Raw Materials	13.0	
Total Raw Materials Cost		148.5
Labor & Fringe @ 32% of Hourly Rate	13.0	
Supplies	11.0	
Energy	8.5	
Factory Overhead	5.0	
Total Conversion Costs		37.6
Capital-Related Costs		19.8
• Total Factory Operating Cost		205.9 ($186.8/MDST)
GS&A	13.0	
Freight Out	30.0	
Total Cost of Sales		43.0
• Total Delivered Cost		248.8 ($225.7/MDST)

*Totals may not add due to rounding.

TABLE D-7-60

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF SBS BOARD

Item	Cost ($000)
Site Preparation	1,200
Stock Preparation	4,000
Board Machine & Roll Finishing	15,500
Steam/Power Generation & Dist.	3,500
Water & Effluent Treatment	2,200
Aux. Equip. & Buildings	1,700
TOTAL DIRECT PLANT COST (DPC)	28,100
Engineering, Const. Supervision & Fee @ 25% DPC	7,000
TOTAL PHYSICAL PLANT COST (PPC)	35,100
OTHER FIXED CAPITAL @ 10% PPC	3,500
	38,600
Use	$39 MM

TABLE D-7-61

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF SBS BOARD

	Men per shift	Shifts per day	Total Men
DIRECT LABOR			
Stock Preparation:			
Foreman	1	1	1
Operator	1	3	4
Beater	1	3	4
Make-up Man	1	1	1
Paper Machine:			
Foreman	1	3	4
Machine Tender	1	3	4
Back Tender	1	3	4
Third to Fifth Hands	4	3	16
Roll Finishing & Wrapping	2	3	8
Total Direct			46
ALLOCATED INDIRECT LABOR			
Shipping & Receiving Foreman	1	1	1
Shipping & Receiving	5	1	5
Material Handling	3	3	12
Utility	5	2	10
Tester	1	3	3
Effluent Treatment	1	3	3
Total Indirect			34

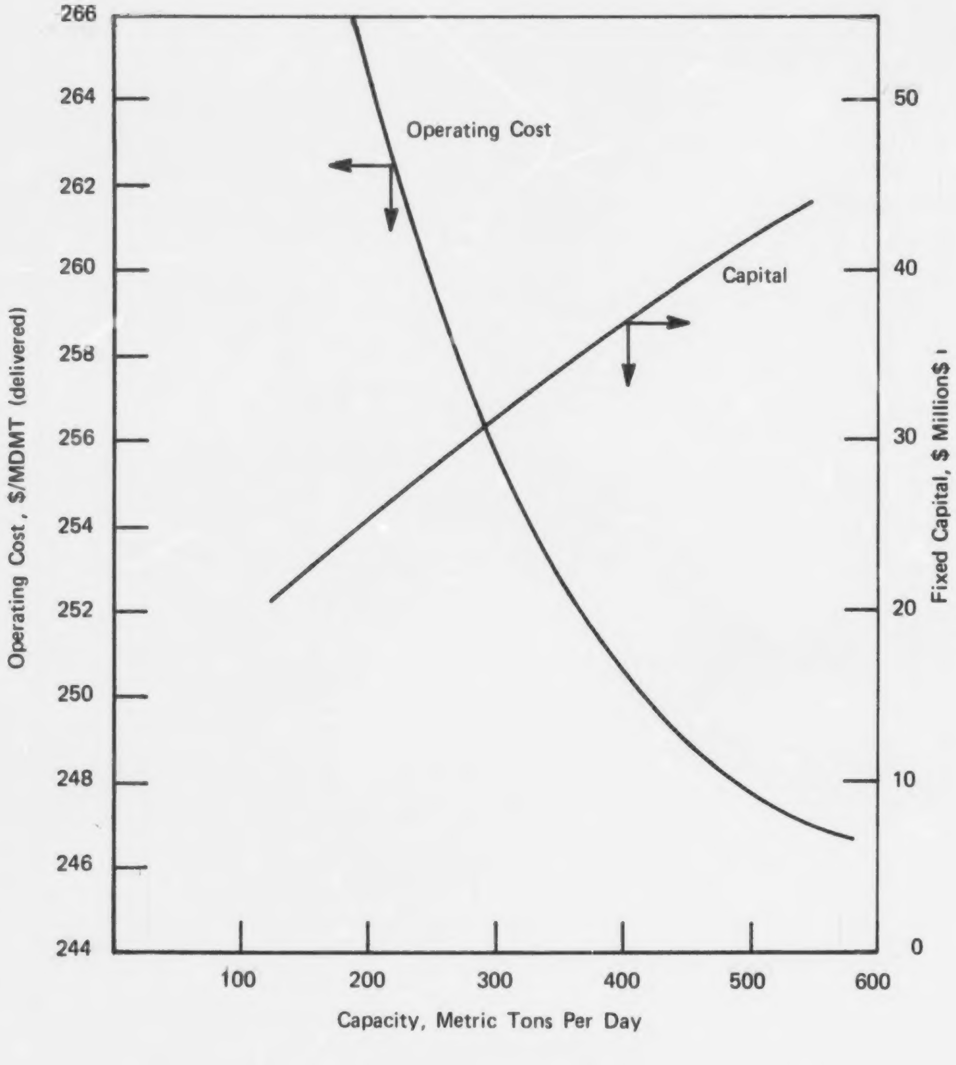

FIGURE D-7-18 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF SBS BOARD

D 7-62

TABLE D - 7 - 62

DESIGN BASIS

Functional Group	Printing & Writing Papers	Process	Integrated to bl. kraft
Grade	Bond paper	Fiber Furnish	100% virgin bl. kraft slush pulp (50% SW, 50% HW)
Basis Weight	70 g/m^2 (47 lb/3300 sq ft)	Pulp Yield	n.a.
Production	272 MDMT/day; 90,000 MDMT/yr (rolls)	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	Transfer of slush pulp through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	33,700	
Other Fixed Capital	3,000	
Total Fixed Capital		37,000
Working Capital		7,000
Total Capital Required		44,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Stock Preparation	–	160
Paper Making	2,700	160
Effluent Treatment	–	20
Misc. & Auxiliaries	500	20
Total	3,200	360

OPERATING COST* ($/MDMT)

Fiber Furnish	146.6	
Other Raw Materials	24.0	
Total Raw Materials Cost		170.6
Labor + Fringe @ 32% of Hourly Rate	13.7	
Supplies	15.0	
Energy	14.8	
Factory Overhead	5.7	
Total Conversion Costs		49.2
Capital-Related Costs		31.6
• Total Factory Operating Cost		251.4 ($228.1/ MDST)
GS&A	34.0	
Freight Out	30.0	
Total Cost of Sales		64.0
• Total Delivered Cost		315.4 ($286.1/ MDST)

*Totals may not add due to rounding.

TABLE D-7-63

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BOND PAPER FROM 100% VIRGIN FIBER

Item	Cost ($000)		
	Bldgs.	Equip.	Total
Site Preparation	1,400	-	1,400
Stock Preparation	400	1,600	2,000
Paper Machine (incl. roll finishing & winding)	2,800	14,600	17,400
Steam/Power Generation & Dist.	200	1,300	1,500
Water & Effluent Treatment	200	2,600	2,800
Auxiliary Equipment & Buildings	1,600	300	1,900
TOTAL DIRECT PLANT COST (DPC)	6,600	20,400	27,000
Engineering, Const. Supervision & Fee @ 25% DPC	1,600	5,100	6,700
TOTAL PHYSICAL PLANT COST (PPC)	8,200	25,500	33,700
OTHER FIXED CAPITAL @ 10% PPC			3,000
TOTAL FIXED CAPITAL			36,700
		Use	$37 MM

TABLE D-7-64

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BOND PAPER FROM 100% VIRGIN FIBER

	Men per Shift	Shifts per Day	Total Men
DIRECT LABOR			
Stock Preparation			
Foreman	1	1	1
Operator	1	3	4
Beater	1	3	4
Makeup Man	1	1	1
Paper Machine			
Foreman	1	1	1
Machine Tender	1	3	4
Back Tender	1	3	4
Helper	1	1	1
Third, Fourth, Fifth Hands	3	3	12
Roll Finishing & Wrapping	1	3	4
TOTAL DIRECT			36
ALLOCATED INDIRECT LABOR			
Shipping & Receiving Foreman	1	1	1
Shipping & Receiving	5	1	5
Materials Handling	3	3	12
Effluent and Water Treatment	1	3	4
Sludge Disposal	1	2	2
Steam Plant	1	3	4
Utility	5	1	5
Tester	1	3	3
TOTAL INDIRECT			36

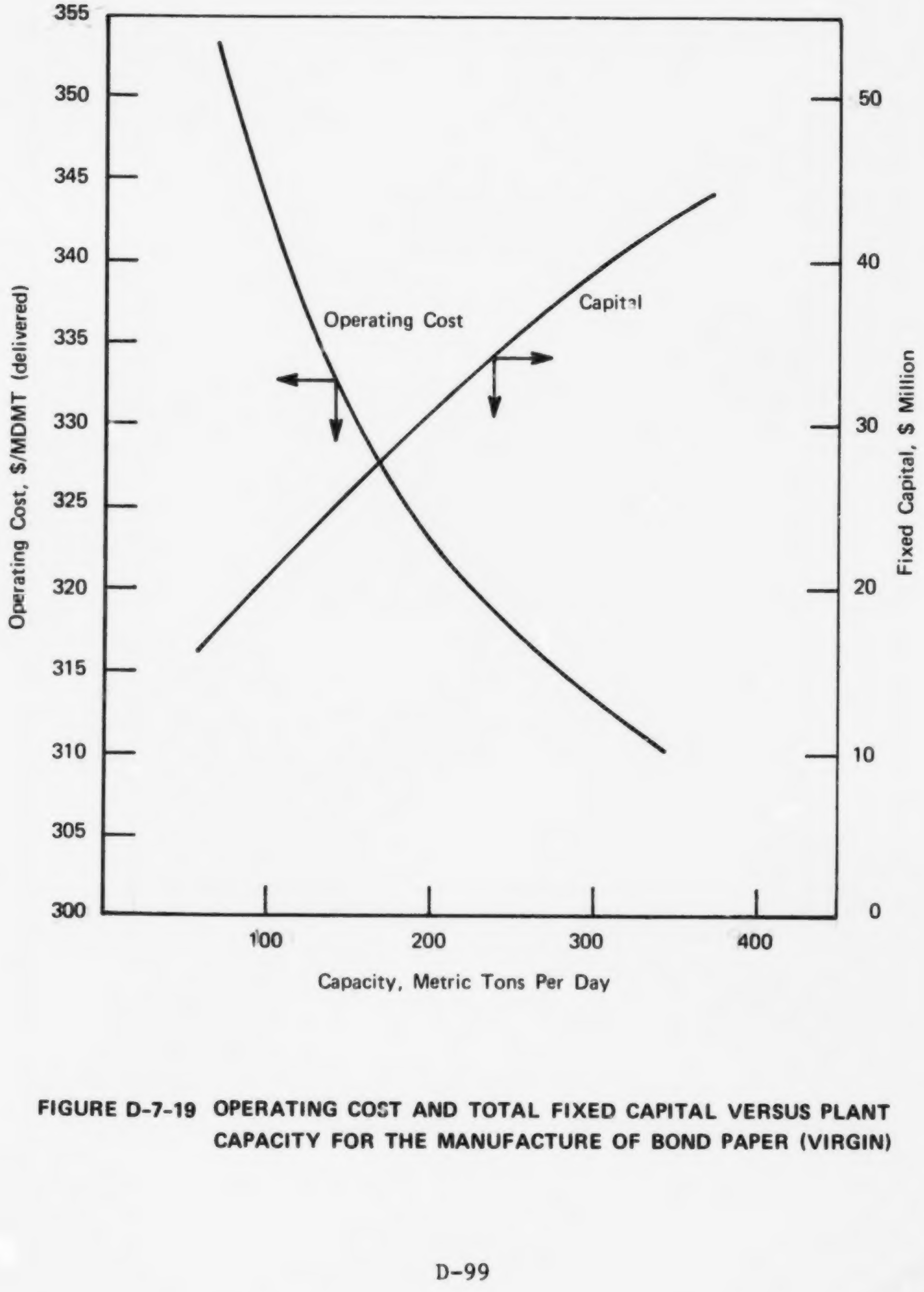

FIGURE D-7-19 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BOND PAPER (VIRGIN)

TABLE D - 7 - 65

DESIGN BASIS

Functional Group	Printing & Writing	Process	Market Pulp
Grade	Bond paper	Fiber Furnish	100% Virgin (market pulp)
Basis Weight	70 g/m^2 (47 lb/3300 sq ft)	Pulp Yield	n.a.
Production	136 MDMT/day; 45,000 MDMT/yr (rolls)	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	Nonintegrated; purchased market pulp through papermaking

CAPITAL REQUIREMENTS*
($000)

Physical Plant	22,200	
Other Fixed Capital	2,200	
Total Fixed Capital		24,000
Working Capital		5,000
Total Capital Required		29,000

ENERGY REQUIREMENTS
(per MDMT)

Steam (kg)	Power (kWh)
3,300	550

OPERATING COST
($/MDMT)

Fiber Furnish	305.1		
Other Raw Materials	14.0		
Total Raw Materials Cost		319.1	
Labor + Fringe @ 32% of Hourly Rate	27.2		
Supplies	17.8		
Energy	26.2		
Factory Overhead	17.1		
Total Conversion Costs		88.3	
Capital-Related Costs		41.1	
● Total Factory Operating Cost		448.5	($406.8/ MDST)
GS&A	34.0		
Freight Out	22.0		
Total Cost of Sales		56.0	
● Total Delivered Cost		504.5	($457.6/ MDST)

*Totals may not add due to rounding.

NOTE: Detailed tabulations of fixed capital and labor requirements are not presented for this model. These requirements were extrapolated from the corresponding data for manufacture of the same product in an integrated mill. Additional fixed capital is needed by a nonintegrated mill, primarily for auxiliary facilities, as it does not benefit from the larger scale and economies obtained by allocating part of the cost of these facilities to an associated pulp mill. With regard to labor requirements, more manpower is needed to handle market pulp than slush pulp.

Similarly, curves showing how operating costs and fixed capital are related to capacity are not included with this model. The shapes of the curves would be the same as for the corresponding integrated mill, but displaced vertically to reflect higher unit costs.

TABLE D - 7 - 66

DESIGN BASIS

Functional Group	Printing & Writing Papers	Process	S/F pulping and de-inking
Grade	Bond paper	Fiber Furnish	100% S/F
Basis Weight	70 g/m^2 (47 lb/3300 sq ft)	Pulp Yield	82% of AD secondary fiber to MD paper
Production	136 MDMT/day; 45,000 MDMT/yr (rolls)	Mill Location	Northeast
		Boundary Limits	S/F preparation through paper making
Net Operating Days	330/yr		

CAPITAL REQUIREMENTS* ($000)

Physical Plant	27,300	
Other Fixed Capital	2,700	
Total Fixed Capital		30,000
Working Capital		5,000
Total Capital Required		35,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
De-inking	500	300
Stock Preparation	–	160
Paper Making	2,700	160
Effluent Treatment	–	20
Misc. & Auxiliaries	600	60
Total	3,800	700

OPERATING COST* ($/MDMT)

Fiber Furnish	192.3	
Other Raw Materials	20.3	
Total Raw Materials Cost		212.4
Labor + Fringe @ 32% of Hourly Rate	31.8	
Supplies	19.7	
Energy	31.5	
Factory Overhead	19.6	
Total Conversion Costs		102.7
Capital-Related Costs		51.1
● Total Factory Operating Cost		366.2 ($332.2/MDST)
GS&A	34.0	
Freight Out	22.0	
Total Cost of Sales		56.0
● Total Delivered Cost		422.2 ($383.0/MDST)

*Totals may not add due to rounding.

TABLE D-7-67

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BOND PAPER FROM 100% SECONDARY FIBER

Item	Cost ($000)		
	Bldgs.	Equip.	Total
Site Preparation	900	-	900
De-inking	400	2,300	2,700
Stock Preparation	200	500	700
Paper Machine (incl. roll finishing & winding)	1,800	9,800	11,600
Steam/Power Generation & Dist.	200	1,300	1,500
Water & Effluent Treatment	200	2,600	2,800
Auxiliary Equipment & Bldgs.	1,400	300	1,700
TOTAL DIRECT PLANT COST (DPC)	5,100	16,800	21,900
Engineering, Const. Supervision & Fee @ 25% DPC	1,300	4,100	5,400
TOTAL PHYSICAL PLANT COST (PPC)	6,400	20,900	27,300
OTHER FIXED CAPITAL @ 10% PPC			2,700
TOTAL FIXED CAPITAL			30,000
		Use	$30 MM

TABLE D-7-68

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BOND PAPER FROM 100% SECONDARY FIBER

	Men per Shift	Shifts per Day	Total Men
DIRECT LABOR			
Stock Preparation			
Foreman	1	1	1
Operator	1	3	4
Beater	1	3	4
Makeup Man	1	1	1
Paper Machine			
Foreman	1	1	1
Machine Tender	1	3	4
Back Tender	1	3	4
Third, Fourth Hands	2	3	8
Roll Finishing & Wrapping	1	3	4
Deinking			
Foreman	1	1	1
Pulper	1	3	4
Helper	1	2	2
Screening Operator	1	3	4
Washer Operator	1	3	4
Trash Handling	1	2	2
TOTAL DIRECT			48
INDIRECT LABOR			
Shipping & Receiving Foreman	1	1	1
Shipping & Receiving	6	1	6
Materials Handling	3	3	12
Effluent & Water Treatment	1	3	4
Sludge Disposal	1	2	2
Steam Plant	1	3	4
Utility	5	1	5
Tester	1	3	4
TOTAL INDIRECT			38

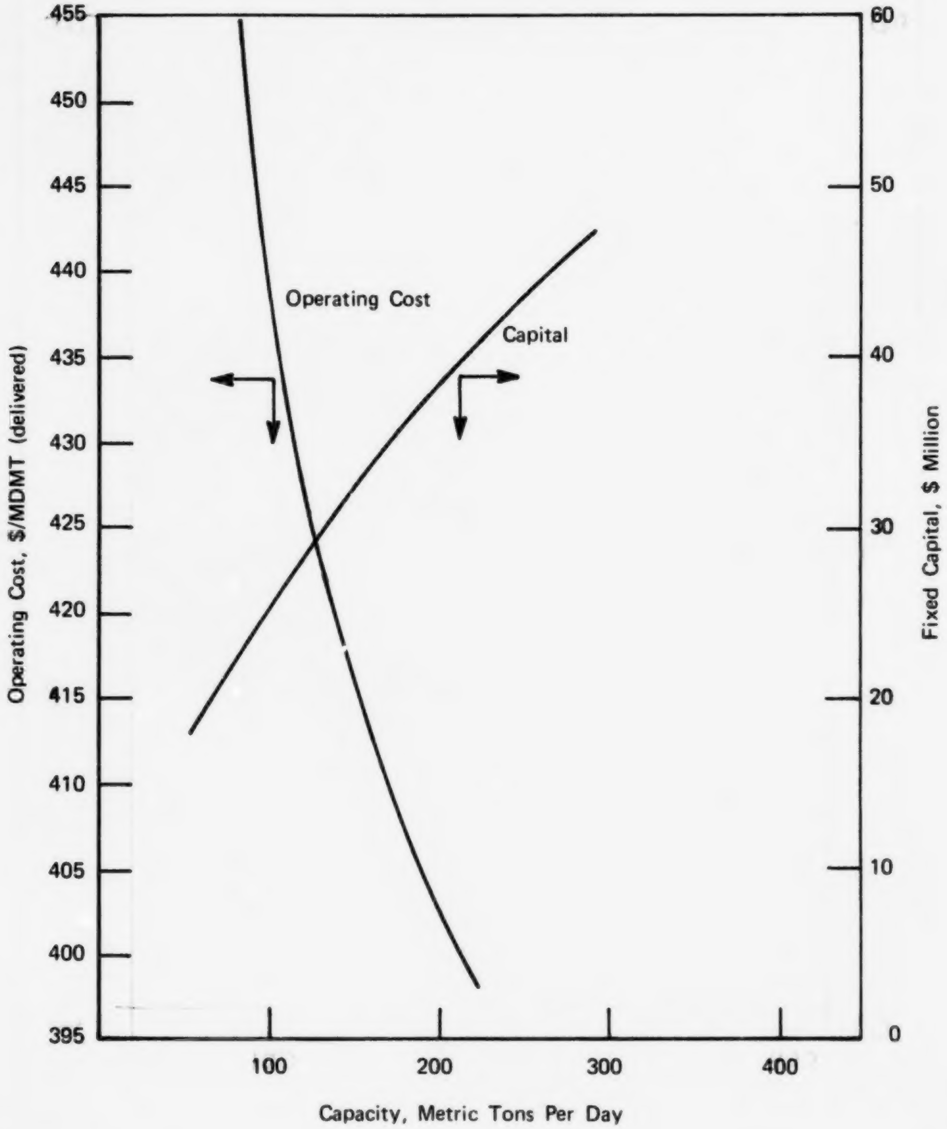

FIGURE D-7-20 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BOND PAPER (SECONDARY)

TABLE D - 7 - 69

DESIGN BASIS

Functional Group	Printing & Writing Papers	Process	Pulp substitute de-inking, integrated to bleached kraft
Grade	Bond paper	Fiber Furnish	67% virgin bl. kraft slush pulp, 33% S/F
Basis Weight	70 g/m^2 (47 lb/3300 sq ft)	Pulp Yield	82% AD S/F to MD paper
Production	272 MDMT/day; 90,000 MDMT/yr (rolls)	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	Transfer of slush pulp and S/F preparation through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	37,800	
Other Fixed Capital	3,800	
Total Fixed Capital		42,000
Working Capital		8,000
Total Capital Required		50,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
De-inking	175	100
Stock Preparation	–	160
Paper Making	2,700	160
Effluent Treatment	–	20
Misc. & Auxiliaries	525	60
Total	3,400	500

OPERATING COST* ($/MDMT)

Fiber Furnish	158.3	
Other Raw Materials	25.9	
Total Raw Materials Cost		184.1
Labor + Fringe @ 32% of Hourly Rate	17.0	
Supplies	16.3	
Energy	18.4	
Factory Overhead	7.2	
Total Conversion Costs		59.2
Capital-Related Costs		35.8
● Total Factory Operating Cost		279.1 ($253.2/MDST)
GS&A	34.0	
Freight Out	30.0	
Total Cost of Sales		64.0
● Total Delivered Cost		343.1 ($311.3/MDST)

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*Totals may not add due to rounding.

TABLE D-7-70

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BOND PAPER FROM VIRGIN AND SECONDARY FIBERS

Item	Cost ($000) Bldgs.	Equip.	Total
Site Preparation	1,400	-	1,400
De-inking	300	1,800	2,100
Stock Preparation	400	1,600	2,000
Paper machine (incl. roll finishing & winding)	2,800	14,600	17,400
Steam/Power Generation & Dist.	300	1,500	1,800
Water & Effluent Treatment	300	3,200	3,500
Auxiliary Equipment & Bldgs.	1,800	300	2,100
TOTAL DIRECT PLANT COST (DPC)	7,300	23,000	30,300
Engineering, Const. Supervision & Fee @ 25% DPC	1,800	5,700	7,500
TOTAL PHYSICAL PLANT COST (PPC)	9,100	28,700	37,800
OTHER FIXED CAPITAL @ 10% PPC			3,800
TOTAL FIXED CAPITAL			41,600
		Use	$42 MM

TABLE D-7-71

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BOND PAPER FROM VIRGIN AND SECONDARY FIBERS

	Men per Shift	Shifts per Day	Total Men
DIRECT LABOR			
Stock Preparation			
Foreman	1	1	1
Operator	1	3	4
Beater	1	3	4
Makeup Man	1	1	1
Paper Machine			
Foreman	1	1	1
Machine Tender	1	3	4
Back Tender	1	3	4
Helper	1	1	1
Third, Fourth and Fifth Hands	3	3	12
Roll Finishing & Wrapping	1	3	4
Deinking			
Foreman	1	1	1
Pulper	1	3	4
Helper	1	1	1
Screening Operator	1	3	4
Washer Operator	1	3	4
Trash Handling	1	1	1
TOTAL DIRECT			51
INDIRECT LABOR			
Shipping & Receiving Foreman	1	1	1
Shipping & Receiving	5	1	5
Materials Handling	3	3	12
Effluent and Water Treatment	1	3	4
Sludge Disposal	1	2	2
Steam Plant	1	3	4
Utility	5	1	5
Tester	1	3	3
TOTAL INDIRECT			36

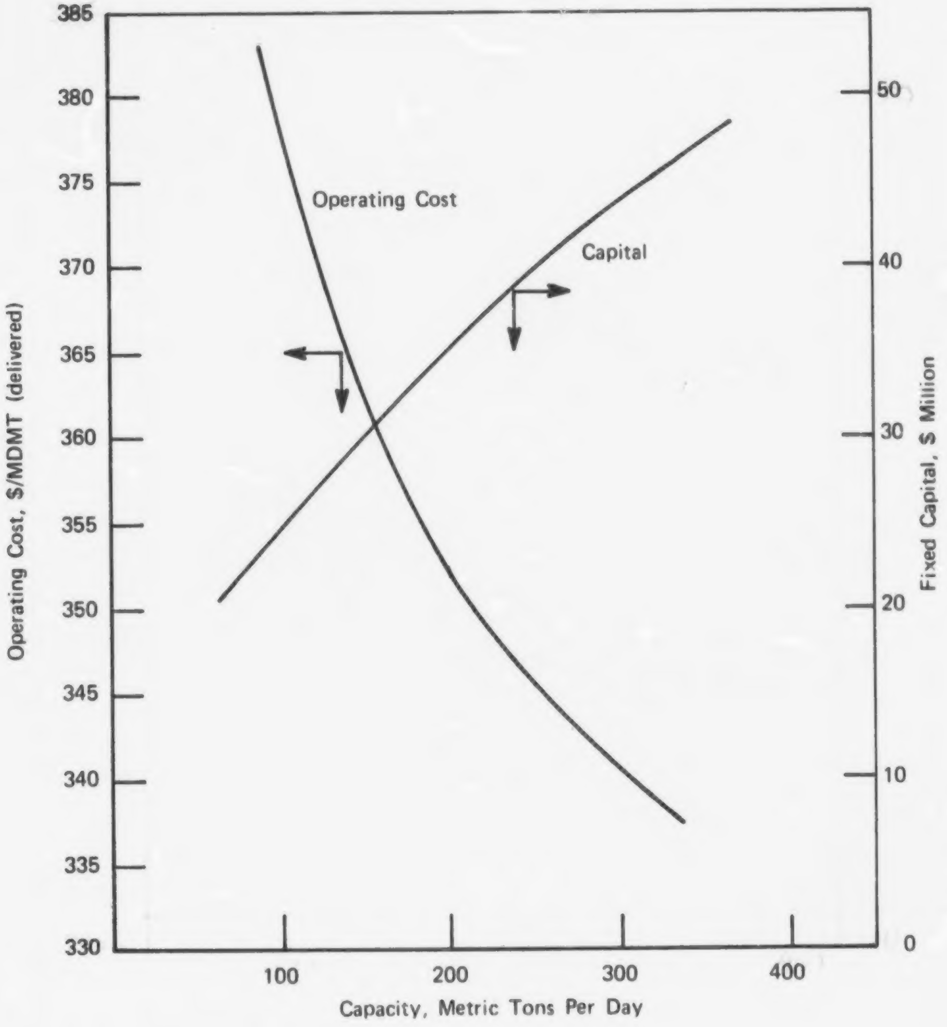

FIGURE D-7-21 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BOND PAPER (BLENDED)

TABLE D - 7 - 72

DESIGN BASIS

Functional Group	Printing, Writing, & Related	Process	Integrated to bleached kraft
Grade	Book paper, uncoated	Fiber Furnish	100% virgin bleached kraft slush pulp (20% SW, 80% HW)
Basis Weight	70 g/m^2 (47 lb/3300 sq ft)	Pulp Yield	n.a.
Production	272 MDMT/day; 90,000 MDMT/yr (rolls)	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	Transfer of slush pulp through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	36,700	
Other Fixed Capital	3,700	
Total Fixed Capital		40,000
Working Capital		7,000
Total Capital Required		47,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Stock Preparation	–	150
Paper Making	3,600	200
Effluent Treatment	–	20
Misc. & Auxiliaries	600	20
Total	4,200	390

OPERATING COST* ($/MDMT)

Fiber Furnish	125.1	
Other Raw Materials	43.5	
Total Raw Materials Cost		168.6
Labor + Fringe @ 32% of Hourly Rate	14.3	
Supplies	16.5	
Energy	18.4	
Factory Overhead	6.5	
Total Conversion Costs		55.8
Capital-Related Costs		34.2
● Total Factory Operating Cost		258.6 ($234.6/ MDST)
GS&A	34.0	
Freight Out	30.0	
Total Cost of Sales		64.0
● Total Delivered Cost		322.6 ($292.7/ MDST)

*Totals may not add due to rounding.

TABLE D-7-73

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BOOK PAPER FROM 100% VIRGIN FIBER

Item	Cost ($000) Bldgs.	Equip.	Total
Site Preparation	1,400	-	1,400
Stock Preparation	400	1,600	2,000
Paper machine (incl. size press, roll finishing & winding)	2,800	16,600	19,400
Steam/Power Generation & Dist.	300	1,600	1,900
Water & Effluent Treatment	200	2,600	2,800
Auxiliary Equipment & Bldgs.	1,600	300	1,900
TOTAL DIRECT PLANT COST (DPC)	6,700	22,700	29,400
Engineering, const. supervision & fee @ 25% DPC	1,600	5,700	7,300
TOTAL PHYSICAL PLANT COST (PPC)	8,300	28,400	36,700
OTHER FIXED CAPITAL @ 10% PPC			3,700
TOTAL FIXED CAPITAL			40,400
		Use	$40 MM

TABLE D-7-74

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BOOK PAPER FROM 100% VIRGIN FIBER

Direct Labor	Total Men*
Stock Preparation	10
Paper Machine	30
	40
Allocated Indirect Labor	36

*For detailed labor schedule, see bond paper from 100% virgin fiber; add 1 machine hand per shift (4 total) for size press

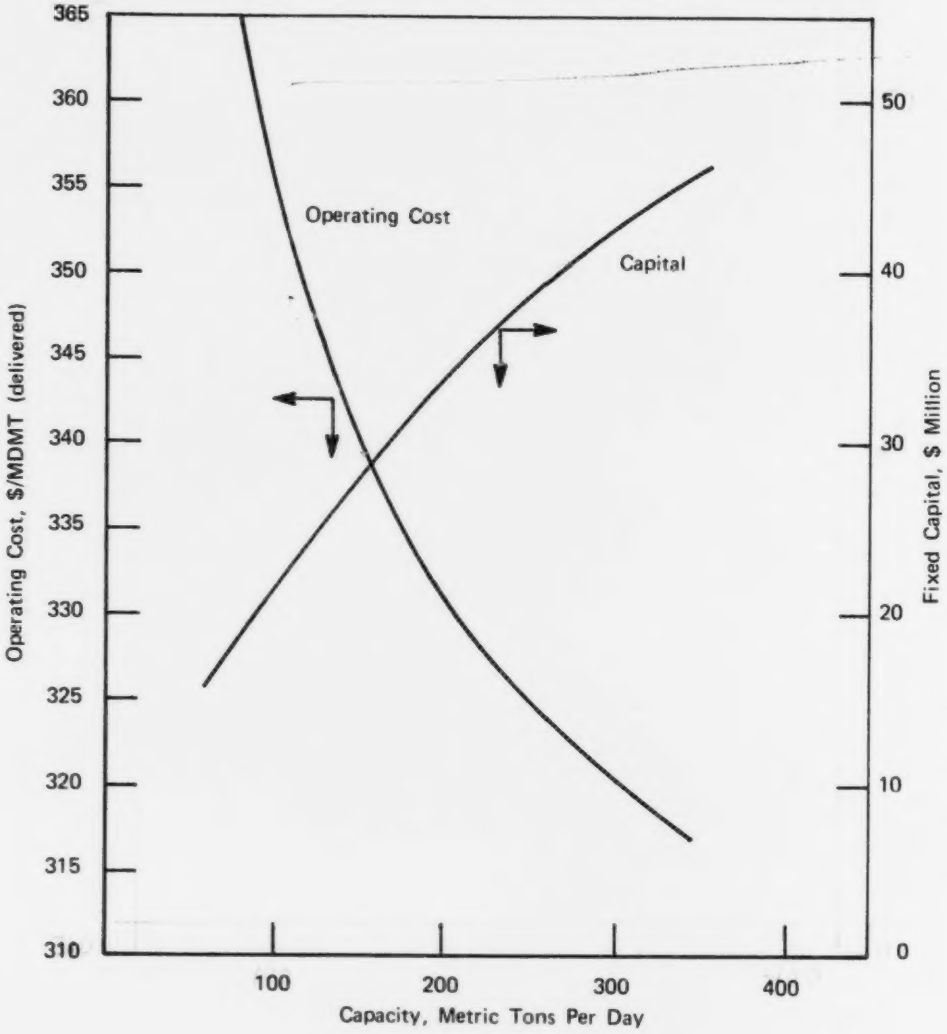

FIGURE D-7-22 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF UNCOATED BOOK PAPER (VIRGIN)

TABLE D - 7 - 75

DESIGN BASIS

Functional Group	Printing & Writing	Process	Market Pulp
Grade	Uncoated book paper	Fiber Furnish	100% virgin (market pulp)
Basis Weight	70 g/m^2 (47 lb/3300 sq ft)	Pulp Yield	n.a.
Production	136 MDMT/day; 45,000 MDMT/yr (rolls)	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	Nonintegrated; purchased market pulp through papermaking

CAPITAL REQUIREMENTS* ($000)

Physical Plant	23,800	
Other Fixed Capital	2,400	
Total Fixed Capital		26,000
Working Capital		5,000
Total Capital Required		31,000

ENERGY REQUIREMENTS (per MDMT)

Steam (kg)	Power (kWh)
4,300	580

OPERATING COST* ($/MDMT)

Fiber Furnish	279.3		
Other Raw Materials	43.5		
Total Raw Materials Cost		322.8	
Labor + Fringe @ 32% of Hourly Rate	27.8		
Supplies	19.4		
Energy	30.6		
Factory Overhead	17.1		
Total Conversion Costs		94.9	
Capital-Related Costs		44.4	
● Total Factory Operating Cost		462.1	($419.1/ MDST)
GS&A	34.0		
Freight Out	22.0		
Total Cost of Sales		56.0	
Total Delivered Cost		518.1	($469.9/ MDST)

*Totals may not add due to rounding.

NOTE: Detailed tabulations of fixed capital and labor requirements are not presented for this model. These requirements were extrapolated from the corresponding data for manufacture of the same product in an integrated mill. Additional fixed capital is needed by a nonintegrated mill, primarily for auxiliary facilities, as it does not benefit from the larger scale and economies obtained by allocating part of the cost of these facilities to an associated pulp mill. With regard to labor requirements, more manpower is needed to handle market pulp than slush pulp.

Similarly, curves showing how operating costs and fixed capital are related to capacity are not included with this model. The shapes of the curves would be the same as for the corresponding integrated mill, but displaced vertically to reflect higher unit costs.

TABLE D - 7 - 76

DESIGN BASIS

Functional Group	Printing, Writing, & Related	Process	S/F pulping and de-inking
Grade	Book paper, uncoated	Fiber Finish	100% S/F
Basis Weight	70 g/m^2 (47 lb/3300 sq ft)	Pulp Yield	82% of AD secondary fiber to MD paper
Production	136 MDMT/day; 45,000 MDMT/yr (Rolls)	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	S/F preparation through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	29,300	
Other Fixed Capital	2,900	
Total Fixed Capital		32,000
Working Capital		5,000
Total Capital Required		37,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
De-inking	500	300
Stock Preparation	–	150
Paper Making	3,600	200
Effluent Treatment	–	20
Misc. & Auxiliaries	700	60
Total	4,800	730

*Totals may not add due to rounding

OPERATING COST* ($/MDMT)

Fiber Furnish	167.5	
Other Raw Materials	49.3	
Total Raw Materials		216.7
Labor + Fringe @ 32% of Hourly Rate	33.1	
Supplies	21.5	
Energy	36.5	
Factory Overhead	20.7	
Total Conversion Costs		111.8
Capital-Related Costs		54.4
● Total Factory Operating Cost		382.9 ($347.4/MDST)
GS&A	34.0	
Freight Out	22.0	
Total Cost of Sales		56.0
● Total Delivered Cost		438.9 ($398.2/MDST)

TABLE D-7-77

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BOOK PAPER FROM 100% SECONDARY FIBER

	Cost ($000)		
Item	Bldgs.	Equip.	Total
Site Preparation	900	-	900
De-inking	400	2,300	2,700
Stock Preparation	200	500	700
Paper Machine (incl. size press, roll finishing & winding)	1,800	11,100	12,900
Steam/Power Generation & Dist.	300	1,500	1,800
Water & Effluent Treatment	200	2,500	2,800
Auxiliary Equipment & Bldgs.	1,400	300	1,700
TOTAL DIRECT PLANT COST (DPC)	5,200	18,300	23,500
Engineering, Const. Supervision & Fee @ 25% DPC	1,300	4,500	5,800
TOTAL PHYSICAL PLANT COST (PPC)	6,500	22,800	29,300
OTHER FIXED CAPITAL @ 10% PPC			2,900
TOTAL FIXED CAPITAL			32,200
		Use	$32 MM

TABLE D-7-78

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BOOK PAPER FROM 100% SECONDARY FIBER

Direct Labor	Total Men*
Stock preparation	10
Paper machine	25
Deinking	17
	52
Allocated Indirect Labor	38

*For detailed labor schedule, see bond paper from 100% secondary fiber; add 4 machine hands for size press

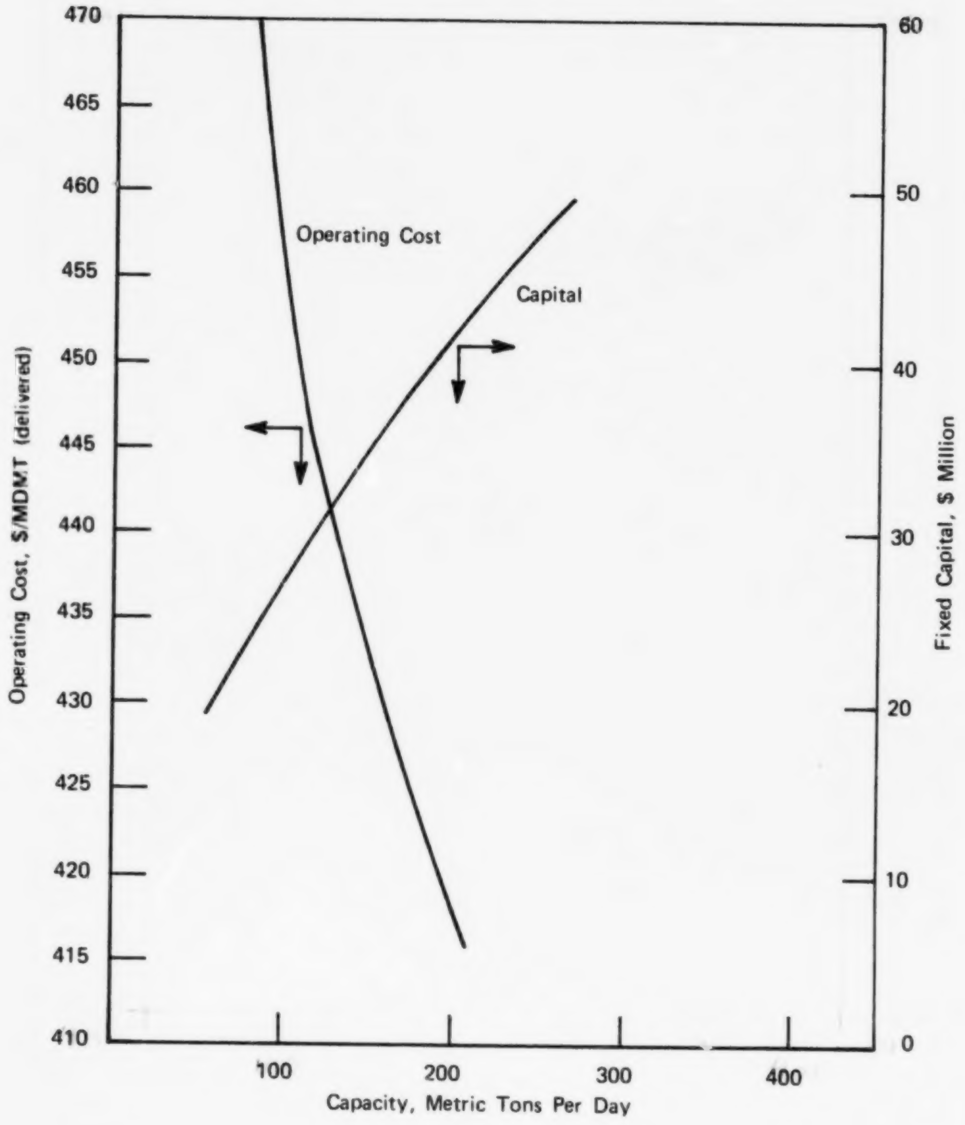

FIGURE D-7-23 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF UNCOATED BOOK PAPER (SECONDARY)

TABLE D - 7 - 79

DESIGN BASIS

Functional Group	Printing, Writing, & Related	Process	Pulp substitute de-inking, integrated to bleached kraft
Grade	Book paper, uncoated	Fiber Furnish	50% virgin bl kraft slush pulp, 50% S/F
Basis Weight	70 g/m^2 (47 lb/3300 sq ft)	Pulp Yield	82% MD paper to AD S/F
Production	272 MDMT/day; 90,000 MDMT/yr (rolls)	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	Transfer of slush pulp and S/F preparation through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	42,900	
Other Fixed Capital	4,300	
Total Fixed Capital		47,000
Working Capital		8,000
Total Capital Required		55,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
De-inking	250	150
Stock Preparation	–	150
Paper Making	3,600	200
Effluent Treatment	–	20
Misc. & Auxiliaries	650	40
Total	4,500	560

OPERATING COST* ($/MDMT)

Fiber Furnish	149.6	
Other Raw Materials	47.0	
Total Raw Materials Cost		196.4
Labor + Fringe @ 32% of Hourly Rate	17.6	
Supplies	18.3	
Energy	22.5	
Factory Overhead	7.9	
Total Conversion Costs		66.4
Capital-Related Costs		40.1
• Total Factory Operating Cost		302.9 ($274.8/MDST)
GS&A	34.0	
Freight Out	30.0	
Total Cost of Sales		64.0
• Total Delivered Cost		366.9 ($332.9/MDST)

*Totals may not add due to rounding.

TABLE D-7-80

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BOOK PAPER FROM VIRGIN AND SECONDARY FIBERS

	Cost	($000)	
Item	Bldg.	Equip.	Total
Site Preparation	1,400	-	1,400
De-inking	500	2,700	3,200
Stock Preparation	400	1,600	2,000
Paper Machine (incl. size press, roll finishing & winding)	2,800	16,600	19,400
Steam/Power Generation & Dist.	300	1,900	2,200
Water & Effluent Treatment	400	3,400	3,800
Auxiliary Equipment & Bldgs.	2,000	300	2,300
TOTAL DIRECT PLANT COST (DPC)	7,800	26,500	34,300
Engineering, Const. Supervision & Fee @ 25% DPC	1,900	6,700	8,600
TOTAL PHYSICAL PLANT COST (PPC)	9,700	33,200	42,900
OTHER FIXED CAPITAL @ 10% PPC			4,300
TOTAL FIXED CAPITAL			47,200
		Use	$47 MM

TABLE D-7-81

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BOOK PAPER FROM VIRGIN AND SECONDARY FIBERS

Direct Labor	Total Men*
Stock preparation	10
Paper machine	30
Deinking	17
	57
Allocated Indirect Labor	36

*For detailed labor schedule, see bond paper from virgin and secondary fibers; add 4 machine hands for size press and 2 helpers for deinking.

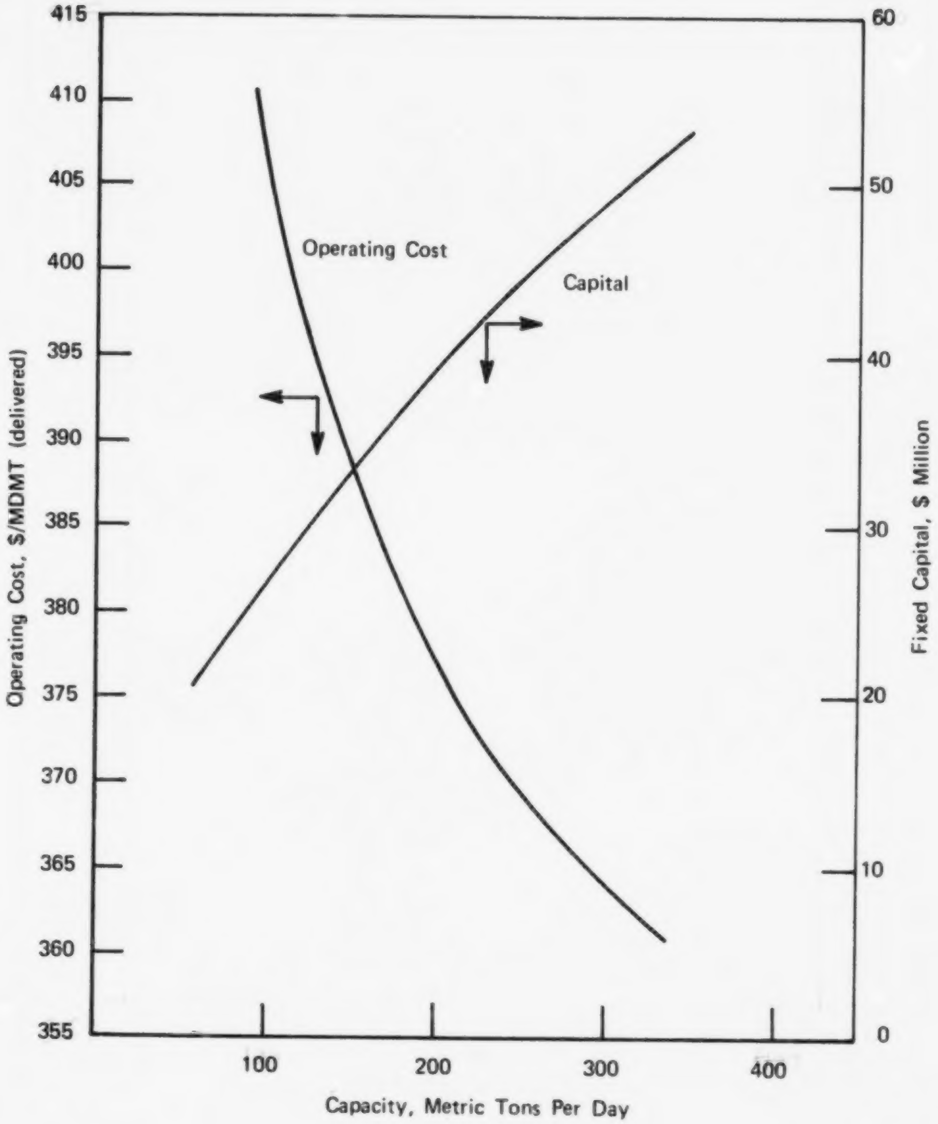

FIGURE D-7-24 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF UNCOATED BOOK PAPER (BLENDED)

TABLE D - 7 - 82

DESIGN BASIS

Functional Group	Industrial Packaging, Converting & Misc.	Process	Integrated to unbl. kraft pulp mill
Grade	Unbl. kraft bag paper	Fiber Furnish	100% unbl. SW kraft slush pulp
Basis Weight	93 g/m^2 (56 lb/3000 sq ft)	Pulp Yield	n.a.
Production	210 MDMT/day; 69,300 MDMT/yr	Mill Location	Southeast
Net Operating Days	330/yr	Boundary Limits	Transfer of slush pulp through paper making

CAPITAL REQUIREMENTS*
($000)

Physical Plant	25,000	
Other Fixed Capital	2,500	
Total Fixed Capital		28,000
Working Capital		3,000
Total Capital Required		31,000

ENERGY REQUIREMENTS
(per MDMT)

	Steam (kg)	Power (kWh)
Stock Preparation	–	220
Paper Making	4,000	100
Effluent Treatment	–	50
Misc. & Auxiliaries	600	170
Total	4,600	540

*Totals may not add due to rounding.

OPERATING COST*
($/MDMT)

Fiber Furnish	90.2	
Other Raw Materials	11.0	
Total Raw Materials Cost		101.2
Labor + Fringe @ 32% of Hourly Rate	17.6	
Supplies	8.3	
Energy	10.5	
Factory Overhead	5.9	
Total Conversion Costs		42.3
Capital-Related Costs		30.9
● Total Factory Operating Cost		174.3 ($158.1/MDST)
GS&A	7.0	
Freight Out	18.0	
Total Cost of Sales		25.0
● Total Delivered Cost		199.3 ($180.8/MDST)

TABLE D-7-83

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF UNBLEACHED KRAFT BAG PAPER FROM 100% VIRGIN FIBER

Item	Cost ($000)
Site Preparation	1,500
Stock Preparation	1,000
Paper Machine	12,000
Steam/Power Generation & Dist.	2,000
Water & Effluent Treatment	2,600
Auxiliary Equipment & Building	900
TOTAL DIRECT PLANT COST (DPC)	20,000
Engineering, Const. Supervision & Fee @ 25% DPC	5,000
TOTAL PHYSICAL PLANT COST (PPC)	25,000
OTHER FIXED CAPITAL @ 10% PPC	2,500
TOTAL FIXED CAPITAL*	27,500
Use	$28 MM

*For papermaking only; plant investment for slush pulp manufacture is in addition and estimated at $ 24 million.

TABLE D-7-84

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF UNBLEACHED KRAFT BAG PAPER FROM 100% VIRGIN FIBER

Direct Labor	Total Men
Stock Preparation	4
Machine Crew	16
Wrapping	4
Roll Handling	8
Chemical Preparation & Handling	1
	33

Allocated Indirect Labor	
Foreman	1
Material Handling	4
Paper Tester	2
Instrumentation	1/2
Effluent Disposal	1
Power & Steam	1
Watchman and Gate	1
Shipping	3
Technician	1
	14 1/2

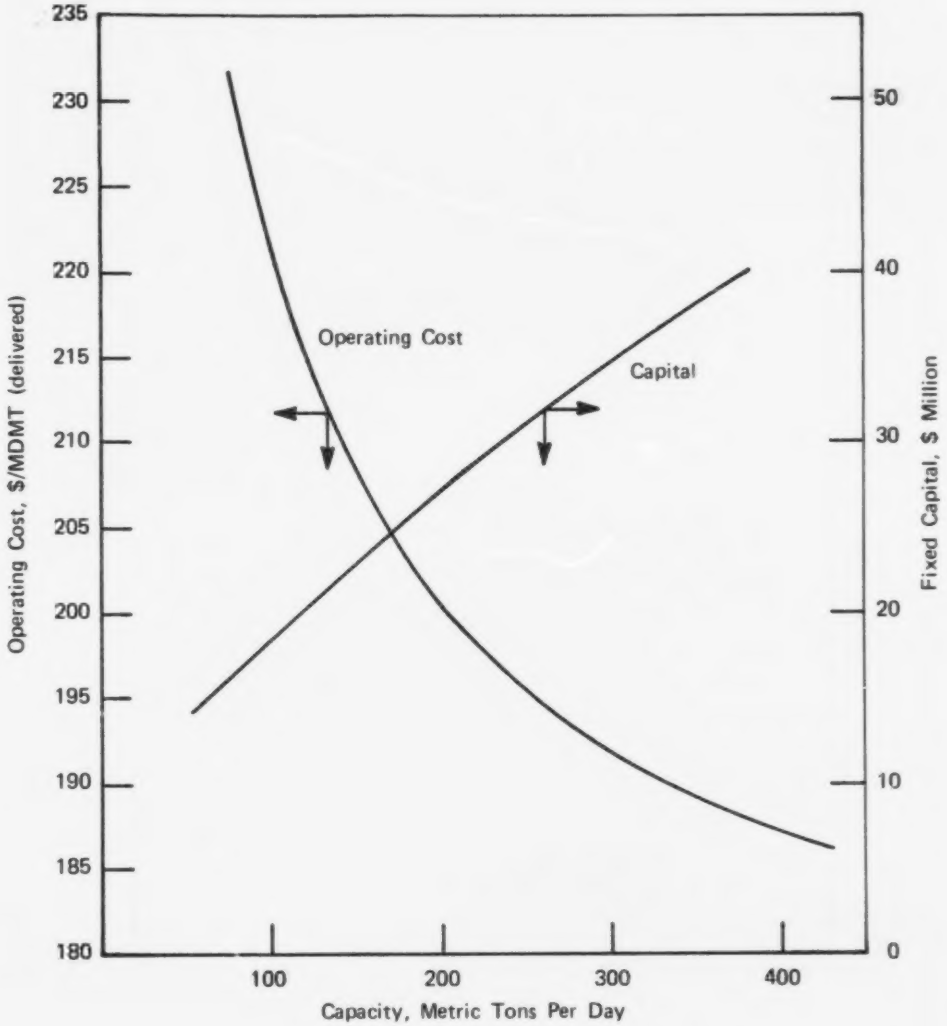

FIGURE D-7-25 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF UNBLEACHED KRAFT BAG PAPER (VIRGIN)

TABLE D - 7 - 85

DESIGN BASIS

Functional Group	Packaging Papers	Process	Market pulp
Grade	Unbleached kraft bag	Fiber Furnish	100% virgin (market pulp)
Basis Weight	93 g/m^2 (57 lb/3000 sq ft)	Pulp Yield	n.a.
Production	120 MDMT/day; 39,600/yr	Mill Location	Northeast
Net Operating Days	330/y	Boundary Limits	Nonintegrated; purchased market pulp through papermaking

CAPITAL REQUIREMENTS* ($000)

Physical Plant	16,900	
Other Fixed Capital	1,700	
Total Fixed Capital		19,000
Working Capital		5,000
Total Capital Required		24,000

ENERGY REQUIREMENTS (per MDMT)

Steam (kg)	Power (kWh)
4,100	630

OPERATING COST ($/MDMT)

Fiber Furnish	306.3	
Other Raw Materials	11.0	
Total Raw Materials Cost		317.3
Labor + Fringe @ 32% of Hourly Rate	29.5	
Supplies	8.4	
Energy	32.2	
Factory Overhead	15.5	
Total Conversion Costs		85.6
Capital-Related Costs		36.6
● Total Factory Operating Cost		439.5 ($398.6/ MDST)
GS&A	7.0	
Freight Out	15.0	
Total Cost of Sales		22.0
● Total Delivered Cost		461.5 ($418.6/ MDST)

*Totals may not add due to rounding.

NOTE: Detailed tabulations of fixed capital and labor requirements are not presented for this model. These requirements were extrapolated from the corresponding data for manufacture of the same product in an integrated mill. Additional fixed capital is needed by a nonintegrated mill, primarily for auxiliary facilities, as it does not benefit from the larger scale and economies obtained by allocating part of the cost of these facilities to an associated pulp mill. With regard to labor requirements, more manpower is needed to handle market pulp than slush pulp.

Similarly, curves showing how operating costs and fixed capital are related to capacity are not included with this model. The shapes of the curves would be the same as for the corresponding integrated mill, but displaced vertically to reflect higher unit costs.

TABLE D-7-86

DESIGN BASIS

Functional Group	Industrial Packaging, converting and Misc.	Process	S/F pulping
Grade	Unbl. kraft bag paper	Fiber Furnish	100% S/F (20% dbl. kraft lined corr. cuts, 80% P/S unbl. kraft grades)
Basis Weight	93 g/m^2 (57 lb/3000 sq ft)	Pulp Yield	93%
Production	120 MDMT/day; 39,600 MDMT/yr	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	S/F preparation through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	18,800	
Other Fixed Capital	1,900	
Total Fixed Capital		21,000
Working Capital		3,000
Total Capital Required		24,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Pulping, Cleaning & Stock Prep.	–	300
Paper Making	4,000	100
Water & Effluent Treatment	–	60
Misc. & Auxiliaries	600	170
Total	4,600	630

OPERATING COST* ($/MDMT)

Fiber Furnish	99.8	
Other Raw Materials	11.5	
Total Raw Materials Cost		111.4
Labor + Fringe @ 32% of Hourly Rate	31.7	
Supplies	8.8	
Energy	32.2	
Factory Overhead	16.4	
Total Conversion Costs		89.1
Capital-Related Costs		40.9
● Total Factory Operating Cost		241.4 ($218.9/MDST)
GS&A	7.0	
Freight Out	15.0	
Total Cost of Sales		22.0
● Total Delivered Cost		263.4 ($238.9/MDST)

*Totals may not add due to rounding.

TABLE D-7-87

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF UNBLEACHED KRAFT BAG PAPER FROM 100% SECONDARY FIBER

Item	Cost ($000)
Site Preparation	900
Pulping & Stock Preparation	1,500
Paper Machine	8,600
Steam Generation/Distribution	1,500
Water & Effluent Treatment	1,900
Auxiliary Equipment & Buildings	600
TOTAL DIRECT PLANT COST (DPC)	15,000
Engineering, Const. Supervision & Fee @ 25% DPC	3,800
TOTAL PHYSICAL PLANT COST (PPC)	18,800
OTHER FIXED CAPITAL @ 10% PPC	1,900
TOTAL FIXED CAPITAL	20,700
Use	$21 MM

TABLE D-7-88

ESTIMATED HOURLY LABOR REQUIREMENT FOR THE MANUFACTURE OF UNBLEACHED KRAFT BAG PAPER FROM 100% SECONDARY FIBER

Direct Labor	Total Men
Pulping	4
Stock Prep.	4
Machine Crew	16
Wrapping	4
Roll Handling	8
Chemical Prep. & Handling	1
	37
Allocated Indirect Labor	
Working Foremen (1 shift)	4
Material Handling	6
Paper Tester	4
Instrumentation	1
Effluent Disposal	2
Steam Generation	3
Watchman and Gate	3
Receiving and Shipping	6
Technician	1
	30

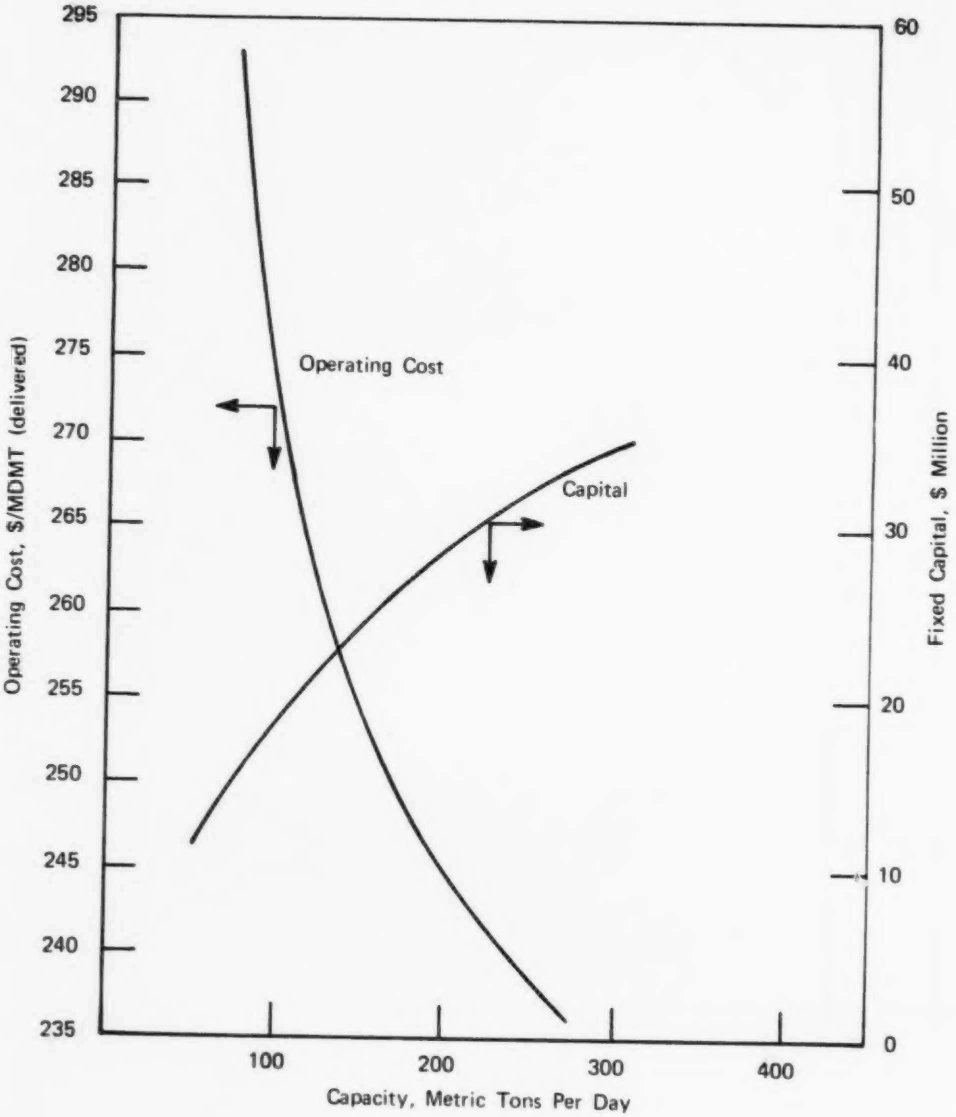

FIGURE D-7-26 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF UNBLEACHED KRAFT BAG PAPER (SECONDARY)

TABLE D - 7- 89

DESIGN BASIS

Functional Group	Industrial Packaging, converting & Misc.	Process	Integrated to unbl. kraft pulp mill
Grade	Unbl. kraft bag paper	Fiber Furnish	70% unbl. SW kraft, 30% S/F (24% P/S unbl. kraft grades, 6% dbl. kraft lined corr. cuts)
Basis Weight	93 g/m^2 (57 lb/3000 sq ft)	Pulp Yield	93% for S/F
Production	210 MDMT/day; 69,300 MDMT/yr	Mill Location	Southeast
Net Operating Days	330/yr	Boundary Limits	Transfer of slush pulp and S/F production through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	26,000	
Other Fixed Capital	2,600	
Total Fixed Capital		29,000
Working Capital		3,000
Total Capital Required		32,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Pulping & Stock Prep	–	240
Paper Making	4,000	100
Water & Effluent Treatment	–	60
Misc. & Auxiliaries	600	160
Total	4,600	560

*Totals may not add due to rounding.

OPERATING COST* ($/MDMT)

Fiber Furnish	92.7	
Other Raw Materials	11.0	
Total Raw Materials Cost		103.6
Labor + Fringe @ 32% of Hourly Rate	18.1	
Supplies	8.3	
Energy	10.7	
Factory Overhead	6.2	
Total Conversion Costs		43.1
Capital-Related Costs		32.0
● Total Factory Operating Cost		178.8 ($162.2/MDST)
GS&A	7.0	
Freight Out	18.0	
Total Cost of Sales		25.0
● Total Delivered Cost		203.8 ($184.8/MDST)

TABLE D-7-90

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF UNBLEACHED KRAFT BAG PAPER FROM VIRGIN AND SECONDARY FIBERS

Item	Cost ($000)
Site Preparation	1,500
Pulping (Secondary Fiber)	1,000
Stock Preparation	800
Paper Machine	12,000
Steam & Power Generation/Distribution	2,000
Water & Effluent Treatment	2,600
Auxiliary Equipment & Buildings	900
TOTAL DIRECT PLANT COST (DPC)	20,800
Engineering, Const. Supervision & Fee @ 25% DPC	5,200
TOTAL PHYSICAL PLANT COST (PPC)	26,000
OTHER FIXED CAPITAL @ 10% PPC	2,600
TOTAL FIXED CAPITAL *	28,600
Use	$29 MM

* Does not include investment required for unbleached SW Kraft slush pulp manufacture.

TABLE D-7-91

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF UNBLEACHED KRAFT BAG PAPER FROM VIRGIN AND SECONDARY FIBERS

Direct Labor	Total Men
Stock Preparation	6
Machine	16
Wrapping	4
Roll Handling	8
Chemical Prep. & Handling	1
	35
Allocated Indirect Labor	
Foreman	1
Material Handling	4
Paper Tester	2
Instrumentation	1/2
Effluent Disposal	1
Power & Steam	1
Watchman and Gate	1
Shipping	3
Technician	1
	14 1/2

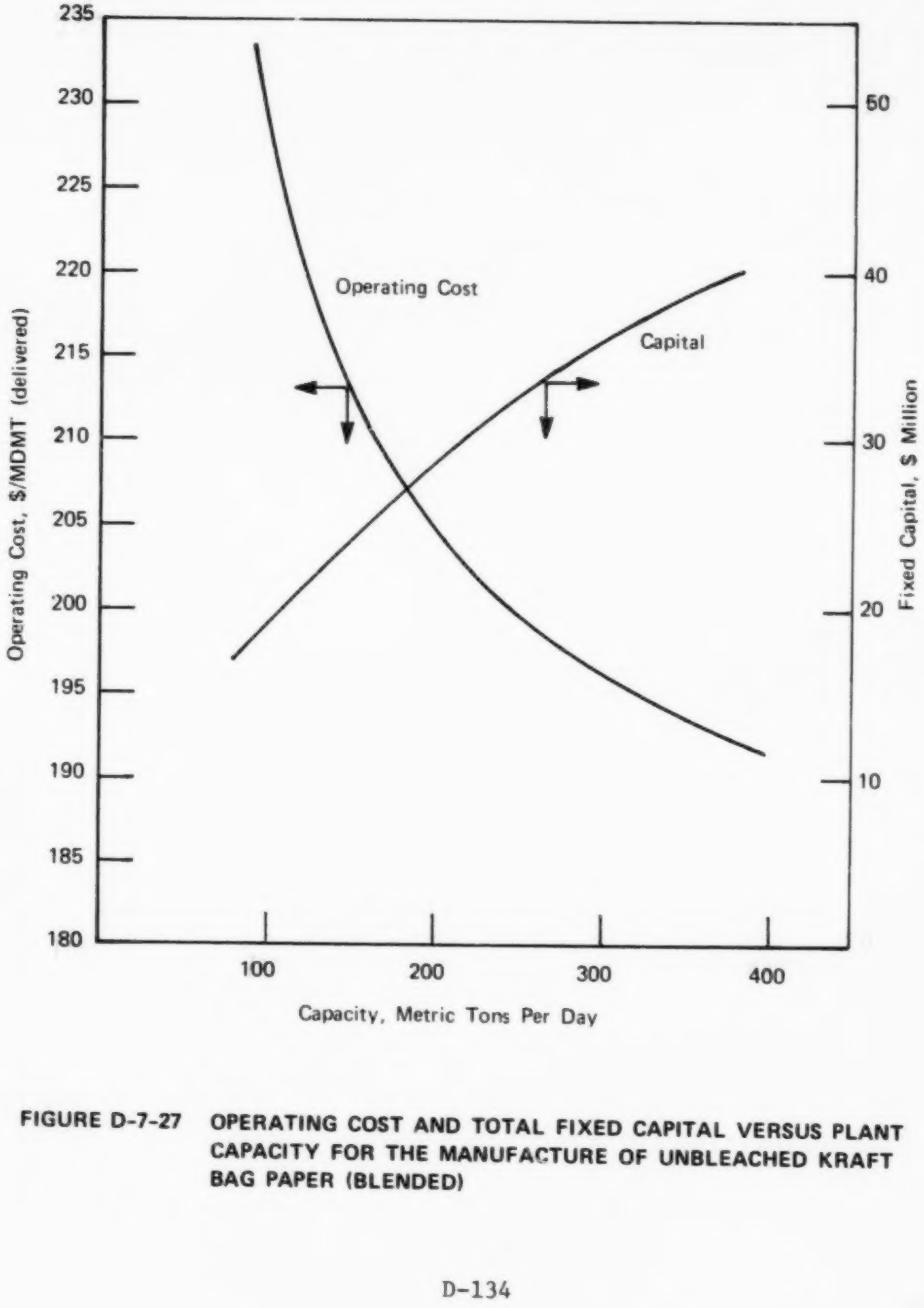

FIGURE D-7-27 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF UNBLEACHED KRAFT BAG PAPER (BLENDED)

TABLE D - 7 - 92

DESIGN BASIS

Functional Group	Industrial Packaging, converting and Misc.	Process	Integrated to unbl. kraft pulp mill
Grade	Tube Paper	Fiber Furnish	100% unbl. SW kraft slush pulp
Basis Weight	146 g/m^2 (90 lb/3000 sq ft)	Pulp Yield	n.a.
Production	240 MDMT/day; 79,200 MDMT/yr	Mill Location	Southeast
Net Operating Days	330/yr	Boundary Limits	Transfer of slush pulp through paper making

CAPITAL REQUIREMENTS*
($000)

Physical Plant	25,000	
Other Fixed Capital	2,500	
Total Fixed Capital		28,000
Working Capital		4,000
Total Capital Required		32,000

ENERGY REQUIREMENTS
(per MDMT)

	Steam (kg)	Power (kWh)
Stock Preparation	–	230
Paper Making	4,000	105
Water & Effluent Treatment	–	50
Misc. & Auxiliaries	600	180
Total	4,600	565

*Totals may not add due to rounding.

OPERATING COST*
($/MDMT)

Fiber Furnish	90.2	
Other Raw Materials	11.0	
Total Raw Materials Cost		101.1
Labor + Fringe @ 32% of Hourly Rate	15.4	
Supplies	8.3	
Energy	10.8	
Factory Overhead	5.2	
Total Conversion Costs		39.6
Capital-Related Costs		27.0
● Total Factory Operating Cost		167.8 ($152.2/MDST)
GS&A	7.0	
Freight Out	15.0	
Total Cost of Sales		22.0
● Total Delivered Cost		189.8 ($172.1/MDST)

TABLE D-7-93

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF TUBE PAPER FROM 100% VIRGIN FIBER

Item	Cost ($000)
Site Preparation	1,500
Stock Preparation	1,000
Paper Machine	12,000
Steam & Power Generation/Distribution	2,000
Water & Effluent Treatment	2,600
Auxiliary Equipment & Buildings	900
TOTAL DIRECT PLANT COST (DPC)	20,000
Engineering, Const. Supervision & Fee @ 25% DPC	5,000
TOTAL PHYSICAL PLANT COST (PPC)	25,000
OTHER FIXED CAPITAL @ 10% PPC	2,500
TOTAL FIXED CAPITAL*	27,500
Use	$28 MM

*For paper making only; plant investment for slush pulp manufacture in addition and estimated at $ 23 million.

TABLE D-7-94

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF TUBE PAPER FROM 100% VIRGIN FIBER

Direct Labor	Total Men
Stock Preparation	4
Machine crew	16
Wrapping	4
Roll Handling	8
Chemical Preparation & Handling	1
	33
Allocated Indirect Labor	
Foreman	1
Material Handling	4
Paper tester	2
Instrumentation	1/2
Effluent disposal	1
Power and steam	1
Watchman and gate	1
Shipping	3
Technician	1
	14 1/2

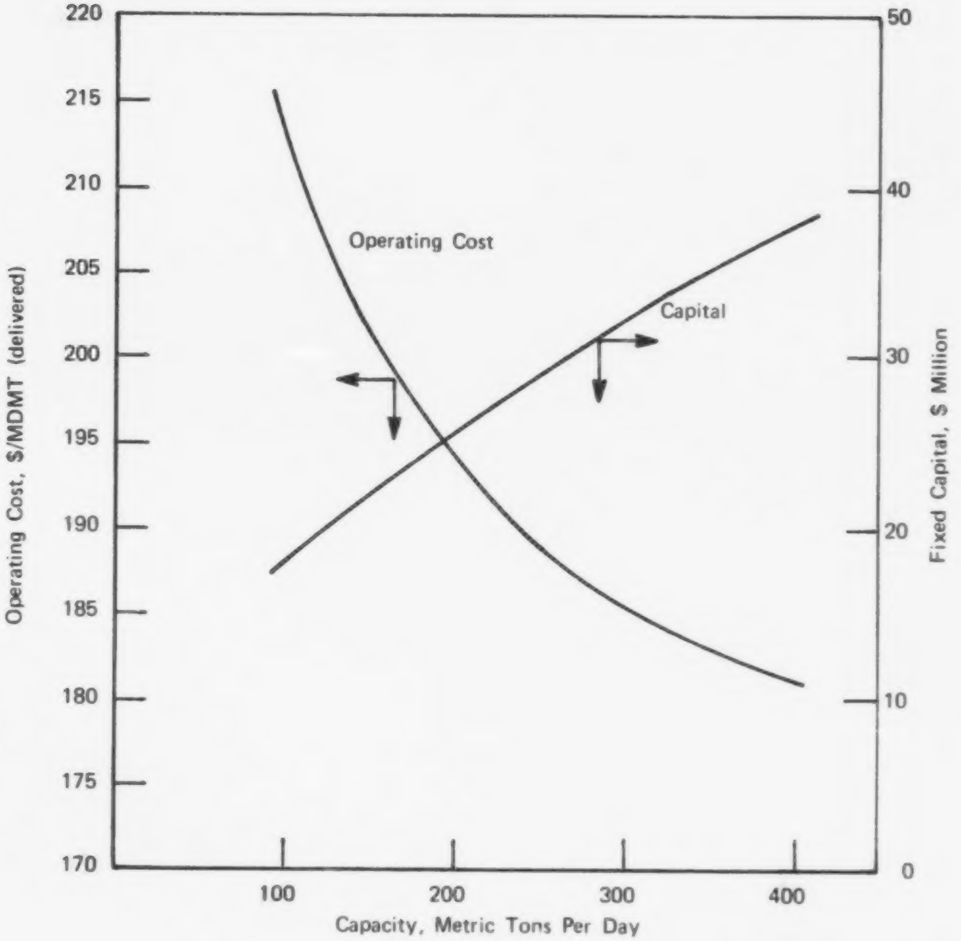

FIGURE D-7-28 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF TUBE PAPER (VIRGIN)

TABLE D - 7 - 95

DESIGN BASIS

Functional Group	Industrial Packaging, Converting & Misc.	Process	S/F pulping
Grade	Tube paper	Fiber Furnish	100% S/F (20% dbl. kraft lined corr. cuts, 80% P/S unbl. kraft grades)
Basis Weight	146 g/m^2 (90 lb/3000 sq ft)	Pulp Yield	93%
Production	136 MDMT/day; 45,000 MDMT/yr	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	S/F preparation through paper making

CAPITAL REQUIREMENTS* ($000)

Physical Plant	18,800	
Other Fixed Capital	1,900	
Total Fixed Capital		21,000
Working Capital		3,000
Total Capital Required		24,000

ENERGY REQUIREMENTS (per MDMT)

	Steam (kg)	Power (kWh)
Pulping	–	315
Paper Making	4,000	105
Water & Effluent Treatment	–	60
Misc. & Auxiliaries	600	180
Total	4,600	660

*Totals may not add due to rounding.

OPERATING COST* ($/MDMT)

Fiber Furnish	99.8	
Other Raw Materials	11.5	
Total Raw Materials Cost		111.3
Labor + Fringe @ 32% of Hourly Rate	28.1	
Supplies	8.8	
Energy	32.9	
Factory Overhead	14.4	
Total Conversion Costs		84.2
Capital-Related Costs		36.0
• Total Factory Operating Cost		231.6 ($210.1/MDST)
GS&A	7.0	
Freight Out	12.0	
Total Cost of Sales		19.0
• Total Delivered Cost		250.6 ($227.3/MDST)

TABLE D-7-96

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF TUBE PAPER FROM 100% SECONDARY FIBER

Item	Cost ($000)
Site Preparation	900
Pulping	1,500
Paper Machine	8,600
Steam Generation/Distribution	1,500
Water & Effluent Treatment	1,900
Auxiliary Equipment & Buildings	600
TOTAL DIRECT PLANT COST (DPC)	15,000
Engineering, Const. Supervision & Fee @ 25% DPC	3,800
TOTAL PHYSICAL PLANT COST (PPC)	18,800
OTHER FIXED CAPITAL @ 10% PPC	1,900
TOTAL FIXED CAPITAL	20,700
Use	$21 MM

TABLE D-7-97

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF TUBE PAPER FROM 100% SECONDARY FIBER

Direct Labor	Total Men
Pulping	4
Stock Prep.	4
Machine crew	16
Wrapping	4
Roll handling	8
Chemical prep. & Handling	1
	37
Indirect Labor	
Working foreman (1/shift)	4
Material handling	6
Paper tester	4
Instrumentation	1
Effluent disposal	2
Steam generation	3
Watchman and gate	3
Receiving and shipping	6
Technician	1
	30

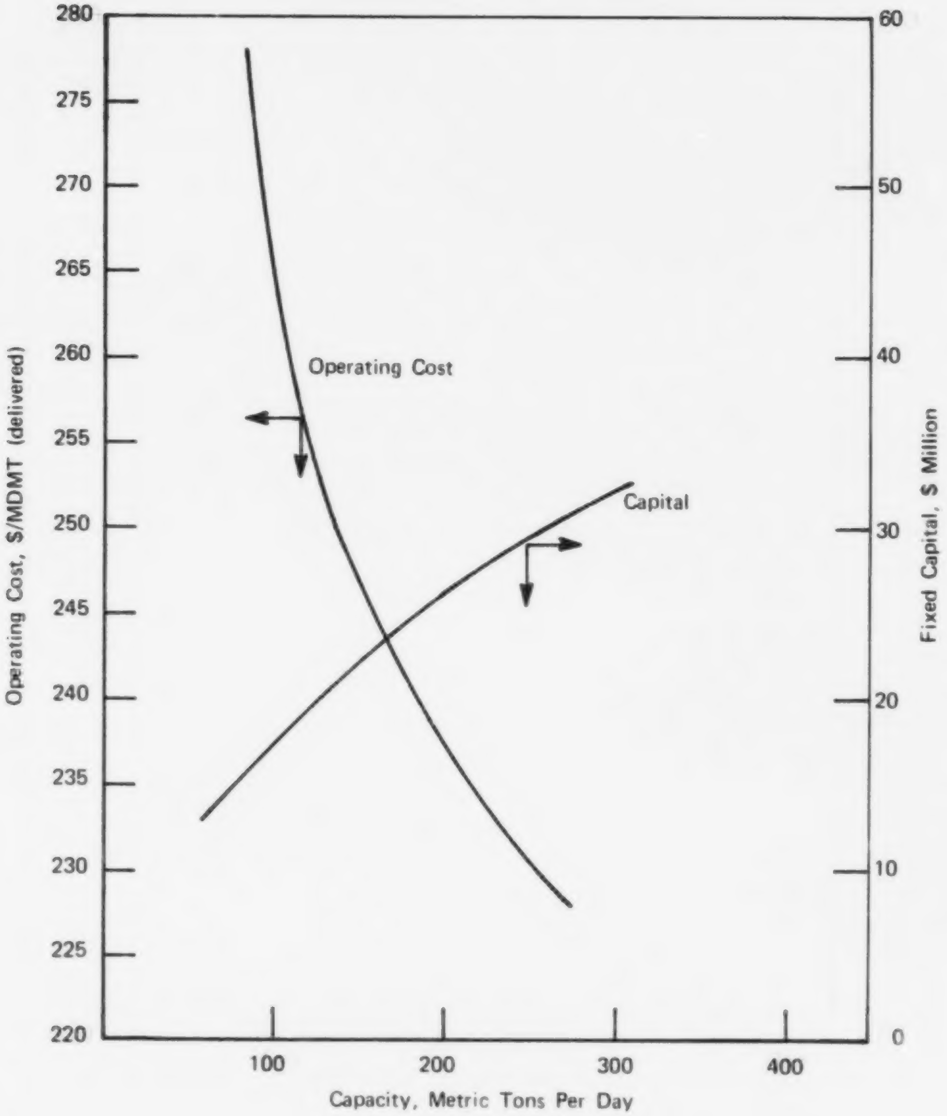

FIGURE D-7-29 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF TUBE PAPER (SECONDARY)

TABLE D - 7 - 98

DESIGN BASIS

Functional Group	Industrial Packaging, Converting & Misc.	Process	Integrated to unbl. kraft pulp mill
Grade	Tube paper	Fiber Furnish	30% unbl. SW kraft, 70% S/F (14% dbl. kraft lined corr. cuts, 56% P/S unbl. kraft grades)
Basis Weight	146 g/m^2 (90 lb/3000 sq ft)	Pulp Yield	93% for S/F
Production	240 MDMT/day; 79,200 MDMT/yr	Mill Location	Southeast
Net Operating Days	330/yr	Boundary Limits	Transfer of slush pulp and S/F preparation through paper making

CAPITAL REQUIREMENTS*
($000)

Physical Plant	26,500	
Other Fixed Capital	2,700	
Total Fixed Capital		29,000
Working Capital		4,000
Total Capital Required		33,000

ENERGY REQUIREMENTS
(per MDMT)

	Steam (kg)	Power (kWh)
Pulping	–	200
Stock Preparation	–	90
Paper Making	4,000	105
Water & Effluent Treatment	–	60
Misc. & Auxiliaries	600	180
Total	4,600	635

OPERATING COST*
($/MDMT)

Fiber Furnish	96.8	
Other Raw Materials	11.0	
Total Raw Materials Cost		107.8
Labor + Fringe @ 32% of Hourly Rate	16.2	
Supplies	8.3	
Energy	11.6	
Factory Overhead	5.6	
Total Conversion Costs		41.7
Capital-Related Costs		28.2
• Total Factory Operating Cost		177.7 ($195.8/MDST)
GS&A	7.0	
Freight Out	15.0	
Total Cost of Sales		22.0
• Total Delivered Cost		199.6 ($181.0/MDST)

*Totals may not add due to rounding.

TABLE D-7-99

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF TUBE PAPER FROM VIRGIN AND SECONDARY FIBERS

Item	Cost ($000)
Site Preparation	1,500
Pulping (Secondary Fiber)	1,700
Stock Preparation	500
Paper Machine	12,000
Steam/Power Generation/Distribution	2,000
Water & Effluent Treatment	2,600
Auxiliary Equipment & Buildings	900
TOTAL DIRECT PLANT COST (DPC)	21,200
Engineering, Const. Supervision & Fee @ 25% DPC	5,300
TOTAL PHYSICAL PLANT COST (PPC)	26,500
OTHER FIXED CAPITAL @ 10% PPC	2,700
TOTAL FIXED CAPITAL*	29,200
Use	$29MM

*For papermaking only; for prescribed quantities of virgin and secondary fiber slush pulp manufacture, add $8 million (derived estimate)

TABLE D-7-100

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF TUBE PAPER FROM VIRGIN AND SECONDARY FIBER

Direct Labor	Total Men
Stock preparation	4
Pulping	4
Machine crew	16
Wrapping	4
Roll Handling	8
Chemical preparation and handling	1
	37

Allocated Indirect Labor	
Foreman	1
Material handling	4
Paper Tester	2
Instrumentation	1/2
Effluent disposal	1
Power and Steam Generation	1
Watchman and Gate	1
Shipping	3
Technician	1
	14 1/2

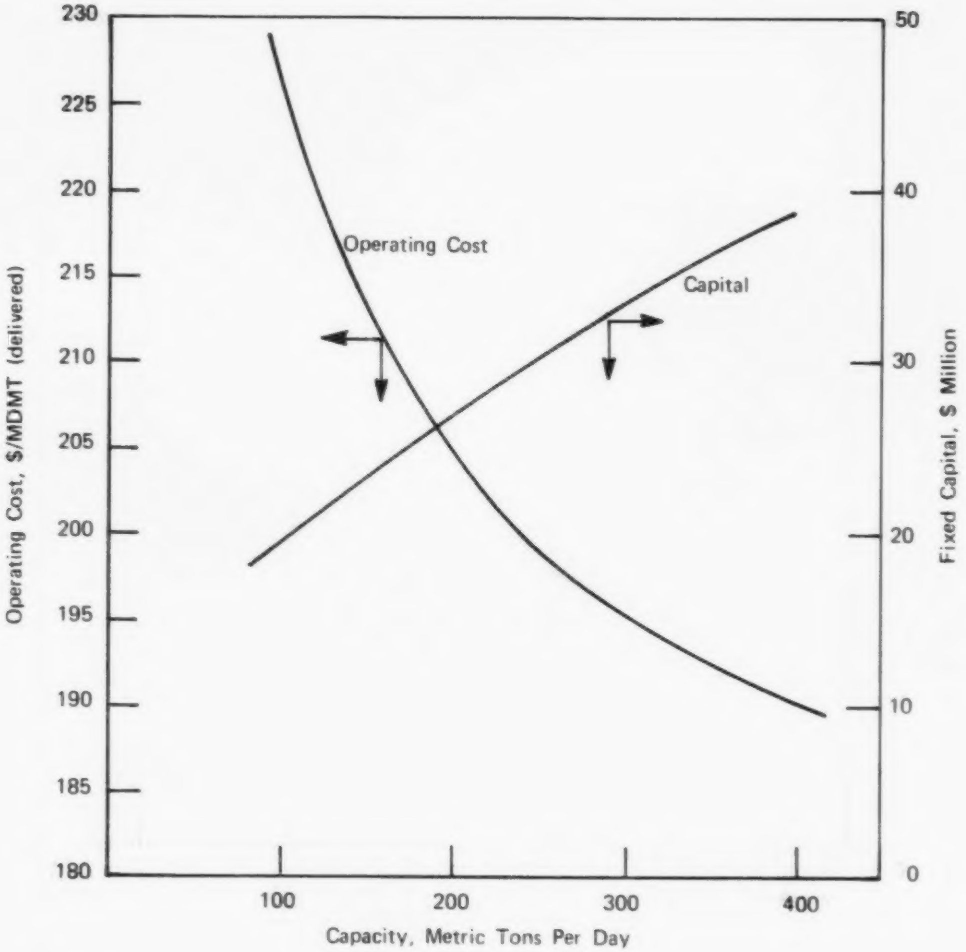

FIGURE D-7-30 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF TUBE PAPER (BLENDED)

TABLE D - 7 - 101

DESIGN BASIS

Functional Group	Const. Paper & Paperboard	Process	Integrated to converting operation
Grade	Roofing felt	Fiber Furnish	55% waste paper, 45% mechanical SW fiber
Basis Weight	510 g/m^3 (50 lb/480 sq ft)	Pulp Yield	99.5% mech. pulping, 94% S/F pulping
Production	136 MDMT/day; 45,000 MDMT/yr	Mill Location	North Central
Net Operating Days	330/yr	Boundary Limits	Wood and S/F preparation through felt making

CAPITAL REQUIREMENTS*
($000)

Physical Plant	11,500	
Other Fixed Capital	1,200	
Total Fixed Capital		13,000
Working Capital		1,000
Total Capital Required		14,000

ENERGY REQUIREMENTS
(per MDMT)

	Steam (kg)	Power (kWh)
Pulping		
Mechanical	200	140
S/F	200	90
Stock Preparation	--	30
Paper Making	2,600	140
Effluent Treatment and Misc.	500	40
Total	3,500	440

OPERATING COST*
($/MDMT)

Fiber Furnish	33.7	
Other Raw Materials	1.8	
Total Raw Materials Cost		35.5
Labor + Fringe @ 32% of Hourly Rate	18.2	
Supplies	5.2	
Energy	21.9	
Factory Overhead	11.3	
Total Conversion Costs		56.7
Capital-Related Costs		22.0
• Total Factory Operating Cost		114.2 ($103.6/MDST)
GS&A	2.5	
Freight Out	n.a.	
Total Cost of Sales		2.5
• Total Delivered Cost		116.7 ($105.9/MDST)

*Totals may not add due to rounding.

TABLE D-7-102

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF ROOFING FELT

Item	Cost ($000)
Site Preparation	300
Pulping (secondary fiber)	2,000
Pulping & Stock Prepration (wood)	2,600
Papermaking	3,000
Steam/Power Generation/Distribution	600
Water & Primary Effluent Treatment	300
Auxiliary Equipment & bldgs.	400
TOTAL DIRECT PLANT COST (DPC)	9,200
Engineering, Const. Supervision & Fee @ 25% DPC	2,300
TOTAL PHYSICAL PLANT COST (PPC)	11,500
OTHER FIXED CAPITAL @ 10% PPC	1,200
TOTAL FIXED CAPITAL	12,700
Use	$13 MM

TABLE D-7-103

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF ROOFING FELT

	Men per Shift	Shifts per Day	Total Men
DIRECT LABOR			
Secondary Fiber Preparation:			
Pulper Man Cleaning	1	3	4
Bale Handling & Breaking	1/2	3	2
Sub-Total			6
Mechanical Wood:			
Chip Unloading	1	1	1
Scale Operator	1	1	1
Chip Recovery & Washing	1	1	1
Pressure Refining & Cleaning	1	3	4
Sub-Total			
Felt Manufacture:			
Machine Crew	4	3	16
Roll Handling & Storage	1	3	4
Sub-Total			20
TOTAL DIRECT			33
INDIRECT LABOR			
Raw Matl's. Handling	3	1	3
Stores	1	1	1
Testing	1	1	1
Process Engineer	1/2	1	1/2
Instrumentation	1/2	1	1/2
Oiler	1	1	1
Foreman	1	1	1
Paper Machine	1	3	4
Shipping & Rec'g.	1	1	1
TOTAL INDIRECT			12

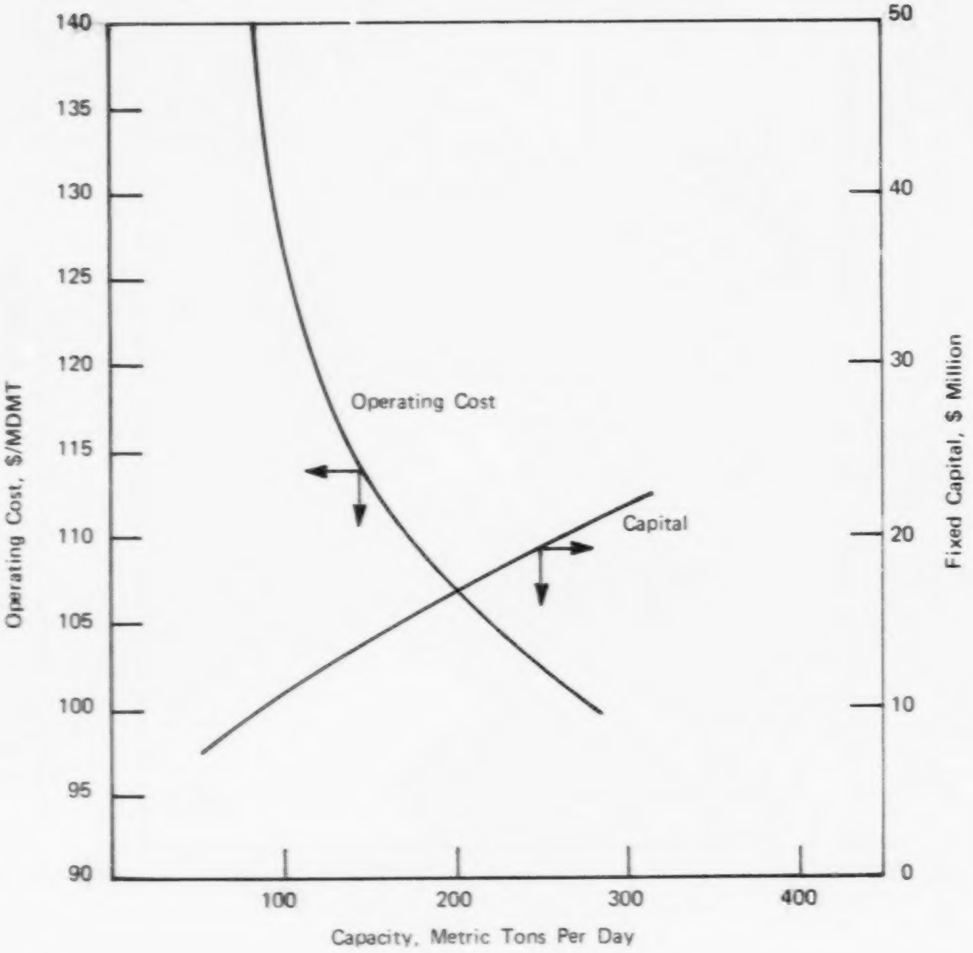

FIGURE D-7-31 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF ROOFING FELT

TABLE D - 7 - 104

DESIGN BASIS

Functional Group	Market Pulp	Process	Continuous kraft pulping, C-E-D-E-D bleaching
Grade	Bleached SW kraft	Fiber Furnish	100% virgin fiber (softwood from 50/50 roundwood/chips)
Basis Weight	n.a.	Pulp Yield	42%
Production	730 ADMT/day; 252,000 ADMT/yr	Mill Location	Southeast
Net Operating Days	345/yr	Boundary Limits	Wood preparation through market pulp production

CAPITAL REQUIREMENTS*
($000)

Physical Plant	127,700	
Other Fixed Capital	12,800	
Total Fixed Capital		140,000
Working Capital		13,000
Total Capital Required		153,000

ENERGY REQUIREMENTS
(per ADMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	120
Pulping	1,970	130
Bleaching	3,620	100
Drying	3,000	130
Power & Steam Gen. (incl. recovery & liquor prep.)	1,970	200
Effluent Treatment	–	20
Misc. & Auxiliaries	1,480	30
Total	12,040	730

OPERATING COST*
($/ADMT)

Fiber Furnish	54.1	
Other Raw Materials	19.0	
Total Raw Materials Cost		73.1
Labor + Fringe @ 32% of Hourly Rate	18.8	
Supplies	12.0	
Energy	8.6	
Factory Overhead	4.9	
Total Conversion Costs		44.2
Capital-Related Costs		42.7
• Total Factory Operating Cost		160.0 ($145.1/ADST)
GS&A	13.0	
Freight Out	30.0	
Total Cost of Sales		43.0
• Total Delivered Cost		203.0 ($184.1/ADST)

*Totals may not add due to rounding.

TABLE D-7-105

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BLEACHED SOFTWOOD KRAFT MARKET PULP IN THE SOUTHEAST

	Cost ($000)		
Item	Bldgs.	Equip.	Total
Site Preparation	4,000	-	4,000
Wood Yard & Wood Preparation	2,000	7,500	9,500
Digester*	3,000	9,300	12,300
Evaporators	400	1,200	1,600
Causticizing	1,200	5,500	6,700
Recovery Boiler	800	13,800	14,600
Power Boiler	1,400	10,900	12,300
Turbine Generator	200	2,900	3,100
Bleach Plant & Chemical Prep.	1,600	9,600	11,200
Power Distribution	-	1,600	1,600
Steam Distribution	-	1,800	1,800
Pulp Dryer & Pulp Storage	2,500	9,800	12,300
Water Treatment	400	1,600	2,000
Effluent Treatment	100	6,100	6,200
Shops, Stores & Mill Services	700	2,300	3,000
TOTAL DIRECT PLANT COST (DPC)	18,300	83,900	102,000
Engineering, Const. Supervision & Fee @ 25% DPC	4,400	21,100	25,500
TOTAL PHYSICAL PLANT COST (PPC)	22,700	105,000	127,700
OTHER FIXED CAPITAL @ 10% PPC	2,300	10,500	12,800
TOTAL FIXED CAPITAL	25,000	115,500	140,500
Use	$25 MM	$115 MM	$140 MM

NOTE: Totals may not add due to rounding

* Includes tall oil recovery

TABLE D-7-106

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BLEACHED SOFTWOOD KRAFT MARKET PULP IN THE SOUTHEAST

Direct Labor	Total Men*
Wood Yard and Wood Preparation	22
Pulp Mill	68
Pulp Dryer	29
Total Direct	119
Indirect Labor	57

* For detailed labor schedule, see bleached hardwood kraft market pulp in the Northeast and adjust for pulp yield and wood density.

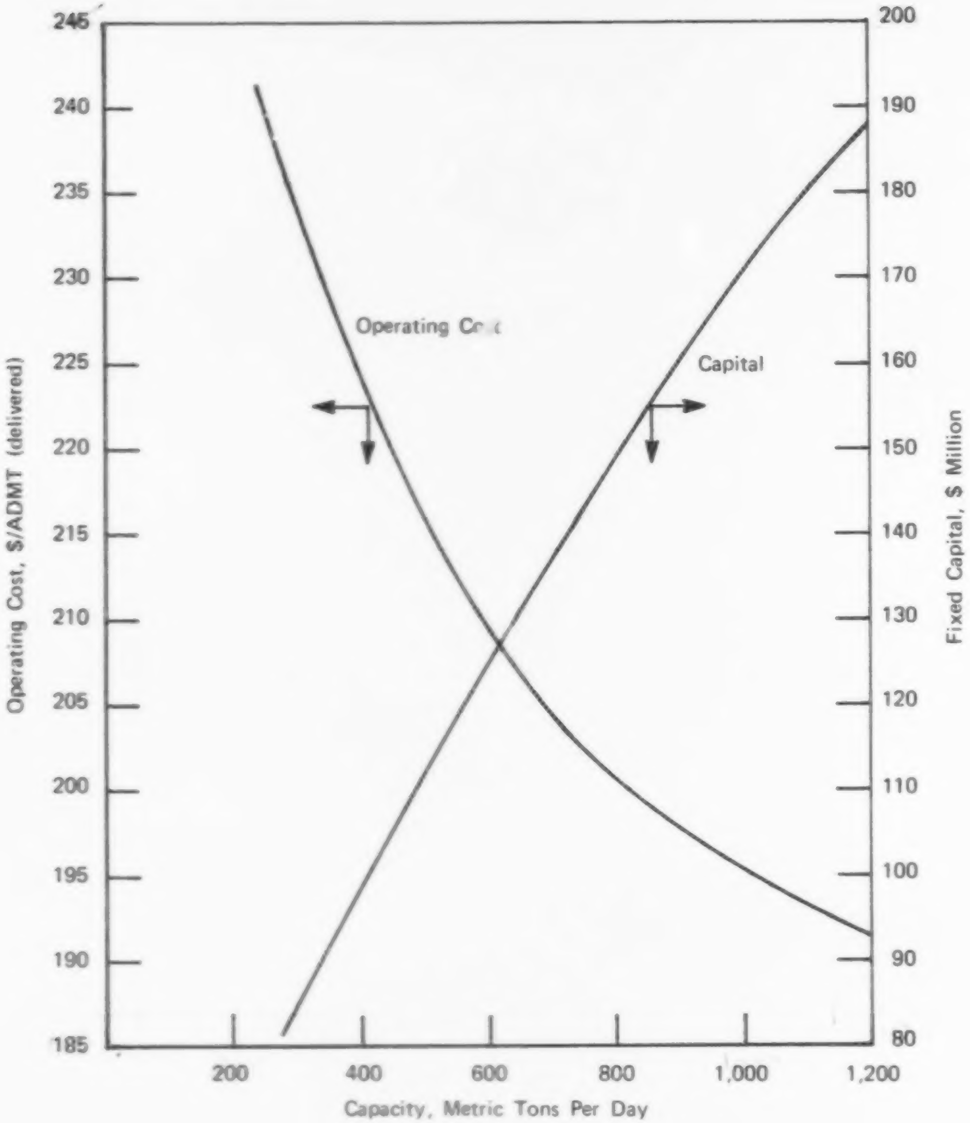

FIGURE D-7-32 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BLEACHED SOFTWOOD KRAFT MARKET PULP (SOUTHEAST)

TABLE D-7-107

ESTIMATED FACTORY OVERHEAD FOR THE MANUFACTURE OF BLEACHED KRAFT PULP[a]

($000 per year)

Position	Production (ADMT/day)		
	1090	730	360
Plant Manager	60	45	40
Assistant	25	20	-
Production Supervisor	40	30	25
Pulp Mill Manager	30	22	20
Administrative Assistant	15	12	-
Technical Director	28	22	20
Process Engineer Manager	25	18	-
Process Engineers (4-3-2)[b]	56	42	28
Technicians (4-3-2)	32	24	16
Clerical (2-1-1)	13	6	6
Quality Control Manager	22	18	16
Lab Chemist	14	12	12
Plant Engineer, Chief	30	25	25
Steam and Power	22	18	16
Chief Electrician	22	18	16
Chief Mechanical	22	18	16
Draftsmen (4-3-2)	32	24	16
Purchasing and Traffic Control			
Manager	22	20	18
Shipping and Receiving	21	14	14
Purchasing Agent	22	14	12
Traffic Control	22	14	12
Clerical (4)	28	21	14
Public Relations and Personnel			
Director	22	18	18
Safety	14	12	
Personnel Administrator	18	14	12
Secretaries (8)	48	36	24
Clerks and Telephone Operators (7)	35	25	20
Watchmen (4)	40	40	40
Cost Accountants (2)	30	20	20

TABLE D-7-107 (cont'd)

ESTIMATED FACTORY OVERHEAD FOR THE MANUFACTURE OF BLEACHED KRAFT PULP[a]

($000 per year)

Position	Production (ADMT/day)		
	1090	730	360
Sales			
Manager	40	30	25
Liaison Engineers (3)	45	30	30
Secretaries (3)	21	14	14
TOTAL SALARIES	916	696	545
Fringe Benefits on Salaried Personnel @ 16%	147	111	87
	1063	807	632
Other Expenses Proportional to Salaries			
Office supplies, communications	105	80	62
Travel and entertainment	66	50	39
Dues, subscriptions, donations	26	20	16
Legal	52	40	31
Accounting	52	40	31
Public relations, advertising, welfare	13	10	8
Total Other Expenses	314	240	187
TOTAL FACTORY OVERHEAD (excl. administration)	$ 1377	$ 1047	$ 819

[a] Table applies to hardwood or softwood pulp from the Northeast or Southeast

[b] Numbers correspond to the three production volumes.

TABLE D - 7 - 108

DESIGN BASIS

Functional Group	Market Pulp	Process	Continuous kraft pulping, C-E-D-E-D bleaching
Grade	Bleached SW kraft	Fiber Furnish	100% virgin fiber (softwood from 50/50 roundwood/ chips
Basis Weight	n.a.	Pulp Yield	42%
Production	730 ADMT/day; 252,000 ADMT/yr	Mill Location	Northeast
Net Operating Days	345/yr	Boundary Limits	Wood preparation through market pulp production

CAPITAL REQUIREMENTS*
($000)

Physical Plant	127,700	
Other Fixed Capital	12,800	
Total Fixed Capital		140,000
Working Capital		15,000
Total Capital Required		155,000

ENERGY REQUIREMENTS
(per ADMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	120
Pulping	1,970	130
Bleaching	3,620	100
Drying	3,000	130
Power & Steam Gen. (incl. recovery & liquor prep.)	1,970	200
Effluent Treatment	–	20
Misc. & Auxiliaries	1,480	30
Total	12,040	730

OPERATING COST*
($/ADMT)

Fiber Furnish	86.9	
Other Raw Materials	21.0	
Total Raw Materials Cost		107.9
Labor + Fringe @ 32% of Hourly Rate	16.5	
Supplies	12.0	
Energy	18.3	
Factory Overhead	4.9	
Total Conversion Costs		51.6
Capital-Related Costs		42.7
• Total Factory Operating Cost		202.1 ($183.3/ADST)
GS&A	13.0	
Freight Out	22.0	
Total Cost of Sales		35.0
• Total Delivered Cost		237.1 ($215.0/ADST)

*Totals may not add due to rounding.

TABLE D-7-109

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BLEACHED SOFTWOOD KRAFT MARKET PULP IN THE NORTHEAST

Item	Cost ($000) Bldgs.	 Equip.	 Total
Site Preparation	4,000	-	4,000
Wood Yard & Wood Preparation	2,000	7,500	9,500
Digester	3,000	9,300	12,300
Evaporators	400	1,200	1,600
Causticizing	1,200	5,500	6,700
Recovery Boiler	800	13,800	14,600
Power Boiler	1,400	10,900	12,300
Turbine Generator	200	2,900	3,100
Bleach Plant & Chemical Prep.	1,600	9,600	11,200
Power Distribution	-	1,600	1,600
Steam Distribution	-	1,800	1,800
Pulp Dryer & Pulp Storage	2,500	9,800	12,300
Water Treatment	400	1,600	2,000
Effluent Treatment	100	6,100	6,200
Shops, Stores & Mill Services	700	2,300	3,000
TOTAL DIRECT PLANT COST (DPC)	18,300	83,900	102,000
Engineering, Const. Supervision & Fee @ 25% DPC	4,400	21,100	25,500
TOTAL PHYSICAL PLANT COST (PPC)	22,700	105,000	127,700
OTHER FIXED CAPITAL @ 10% PPC	2,300	10,500	12,800
TOTAL FIXED CAPITAL	25,000	115,500	140,500
Use	$25 MM	$115 MM	$140 MM

NOTE: Totals may not add due to rounding

TABLE D-7-110

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BLEACHED SOFTWOOD KRAFT MARKET PULP IN THE NORTHEAST

Direct Labor	Total Men*
Wood Yard and Wood Preparation	25
Pulp Mill	68
Pulp Dryer	29
Total Direct	122
Indirect Labor	57

*For detailed labor schedule, see bleached hardwood kraft market pulp in the Northeast and adjust for pulp yield and wood density.

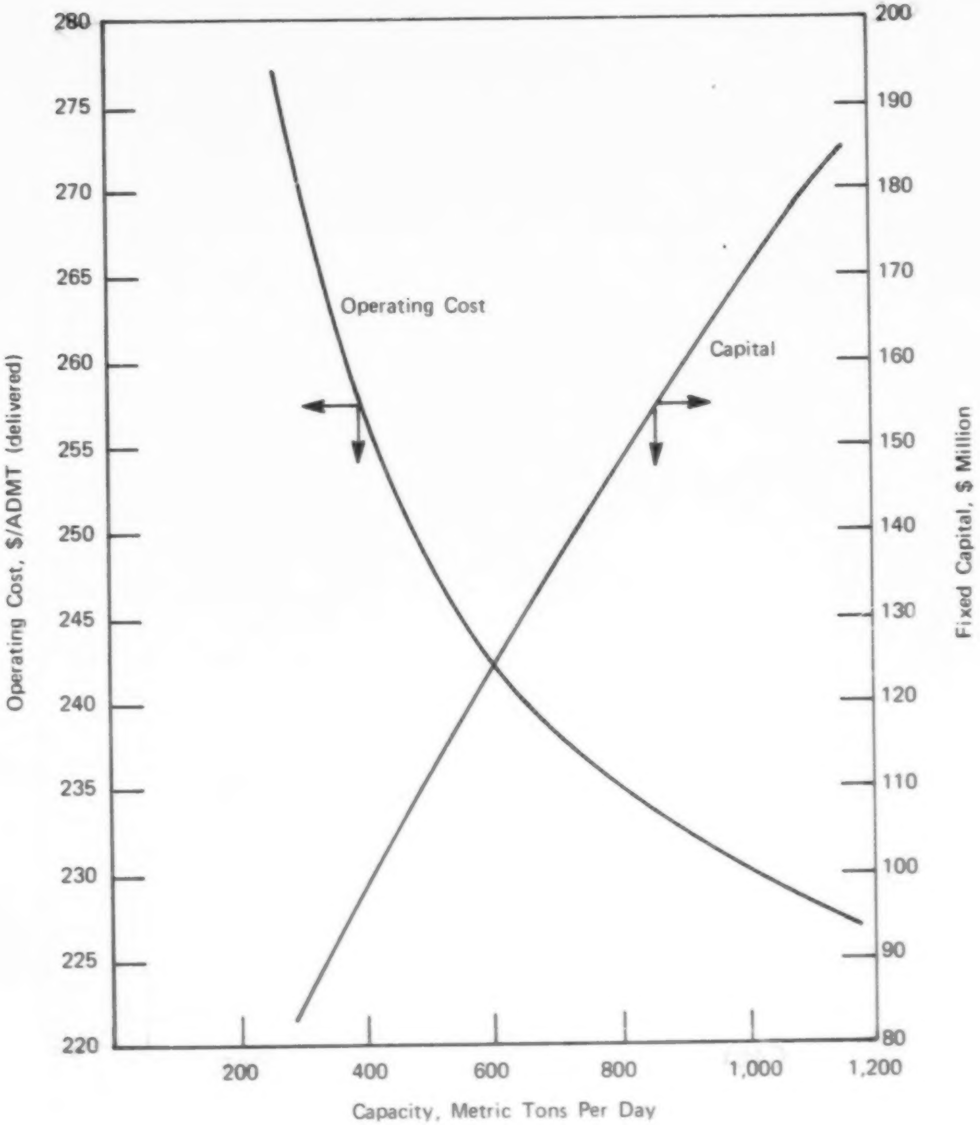

FIGURE D-7-33 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BLEACHED SOFTWOOD KRAFT MARKET PULP (NORTHEAST)

TABLE D-7-111

DESIGN BASIS

Functional Group	Market Pulp	Process	Continuous kraft pulping, C-E-D-E-D bleaching
Grade	Bleached HW kraft	Fiber Furnish	100% virgin fiber (hardwood from 50/50 roundwood/chips)
Basis Weight	n.a.	Pulp Yield	46%
Production	730 ADMT/day; 252,000 ADMT/yr	Mill Location	Southeast
Net Operating Days	345/yr	Boundary Limits	Wood preparation through market pulp production

CAPITAL REQUIREMENTS ($000)

Physical Plant	120,000	
Other Fixed Capital	12,000	
Total Fixed Capital		132,000
Working Capital		12,000
Total Capital Required		144,000

ENERGY REQUIREMENTS (per ADMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	110
Pulping	1,810	120
Bleaching	3,290	90
Drying	3,000	130
Power & Steam Gen. (incl. recovery & liquor prep.)	1,810	180
Effluent Treatment	–	20
Misc. & Auxiliaries	1,350	60
Total	11,260	710

OPERATING COST* ($/ADMT)

Fiber Furnish	40.2	
Other Raw Materials	18.0	
Total Raw Materials Cost		58.3
Labor + Fringe @ 32% of Hourly Rate	17.4	
Supplies	12.0	
Energy	9.5	
Factory Overhead	4.8	
Total Conversion Costs		43.6
Capital-Related Costs		41.4
• Total Factory Operating Cost		143.2 ($129.9/ADST)
GS&A	13.0	
Freight Out	30.0	
Total Cost of Sales		43.0
• Total Delivered Cost		186.2 ($168.9/ADST)

*Totals may not add due to rounding.

NOTE: Curves relating operating cost and fixed capital to capacity are not included for this model. The shapes of these curves would be the same as for a mill in the Northeast (see following model), but the operating cost curve would be displaced vertically to reflect lower unit costs.

TABLE D-7-112

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BLEACHED HARDWOOD KRAFT MARKET PULP IN THE SOUTHEAST*

Item	Cost ($000)		
	Bldgs.	Equip.	Total
Site Preparation	4,000	-	4,000
Wood Yard & Wood Preparation	1,700	6,200	7,900
Digester	2,600	8,100	10,700
Evaporators	400	1,100	1,500
Causticizing	1,100	4,900	6,000
Recovery Boiler	800	13,800	14,600
Power Boiler	1,100	9,000	10,100
Turbine Generator	200	2,900	3,100
Bleach Plant & Chemical Prep.	1,600	9,600	11,200
Power Distribution	-	1,600	1,600
Steam Distribution	-	1,800	1,800
Pulp Dryer & Pulp Storage	2,500	9,800	12,300
Water Treatment	400	1,600	2,000
Effluent Treatment	100	6,100	6,200
Shops, Stores & Mill Services	700	2,300	3,000
TOTAL DIRECT PLANT COST (DPC)	17,200	78,800	96,000
Engineering, Const. Supervision & Fee @ 25% DPC	4,100	19,900	24,000
TOTAL PHYSICAL PLANT COST (PPC)	21,300	98,700	120,000
OTHER FIXED CAPITAL @ 10% PPC	2,100	9,900	12,000
TOTAL FIXED CAPITAL	23,400	108,600	132,000
Use	$23 MM	$109 MM	$132 MM

NOTE: Totals may not add due to rounding

*Costs also apply to pulp mills in the Northeast

TABLE D-7-113

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BLEACHED HARDWOOD KRAFT MARKET PULP IN THE SOUTHEAST

Direct Labor		Total Men*
Wood Yard and Wood Preparation		19
Pulp Mill		68
Pulp Dryer		29
	Total Direct	116
Indirect Labor		54

* For detailed labor schedule, see bleached hardwood kraft market pulp in the Northeast

TABLE D - 7 - 114

DESIGN BASIS

Functional Group	Market Pulp	Process	Continuous kraft pulping, C-E-D-E-D bleaching
Grade	Bleached HW kraft	Fiber Furnish	100% virgin fiber (hardwood from 50/50 roundwood/chips)
Basis Weight	n.a.	Pulp Yield	46%
Production	730 ADMT/day; 252,000 ADMT/yr	Mill Location	Northeast
Net Operating Days	345/yr	Boundary Limits	Wood preparation through market pulp production

CAPITAL REQUIREMENTS* ($000)

Physical Plant	120,000	
Other Fixed Capital	12,000	
Total Fixed Capital		132,000
Working Capital		12,000
Total Capital Required		144,000

ENERGY REQUIREMENTS (per ADMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	110
Pulping	1,810	120
Bleaching	3,290	90
Drying	3,000	130
Power & Steam Gen. (incl. recovery & liquor prep.)	1,810	180
Effluent Treatment	–	20
Misc. & Auxiliaries	1,350	60
Total	11,260	710

OPERATING COST** ($/ADMT)

Fiber Furnish	55.1	
Other Raw Materials	18.0	
Total Raw Materials Cost		73.2
Labor + Fringe @ 32% of Hourly Rate	16.1	
Supplies	12.0	
Energy	20.3	
Factory Overhead	4.2	
Total Conversion Costs		52.5
Capital-Related Costs		41.4
• Total Factory Operating Cost		167.0 ($151.5/ADST)
GS&A	12.6	
Freight Out	22.0	
Total Cost of Sales		34.6
• Total Delivered Cost		201.6 ($182.9/ADST)

* Detailed investment schedule same as for pulp mills in the Southeast. (See preceding model.)

** Totals may not add due to rounding.

TABLE D-7-115

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BLEACHED HARDWOOD KRAFT MARKET PULP IN THE NORTHEAST

Basis: Fringe benefit at 32% hourly rate

	Rate ($/hr)	Men per Shift	Shifts per Day	Total Men	Cost ($000 yr/ w/Fringe
DIRECT LABOR					
Wood Yard & Wood Prep.					
Foreman	5.81	1	2	2	29.47
Asst. Foreman	5.24	1	1	1	13.30
Equip. Operator	4.94	3	2	6	75.06
Drum Barker Operator	4.11	1	2	2	20.86
Drum Barker Helper	3.59	2	2	4	36.40
Chipper Operator	4.37	1	2	2	22.13
Utility (knife grinder)	4.75	1	2	2	24.10
Sub-Total	4.60			19	221.32
Pulp Mill					
Foreman - Pulp Mfg.	7.00	1	3	4	70.50
Foreman - Recovery	6.84	1	3	4	69.35
Digester Operator	5.40	1	3	4	54.78
Helper	4.71	1	3	4	47.73
Brown Stock Washer Op.	4.81	1	3	4	48.77
Bleach Plant Operator	4.77	1	3	4	48.31
Bleach Plant Helper	4.45	1	3	4	45.08
Screening & Cleaning Helper	4.45	2	3	8	90.12
Bleach Liq. Prep.	4.56	2	3	8	92.45
Liquor Evap. Operator	4.51	1	3	4	45.76
Lime Kiln Operator	4.48	1	3	4	45.42
Causticizer Operator	4.62	1	3	4	46.81
Helper	4.45	2	3	8	90.14
Utility	4.45	1	3	4	45.08
Sub-Total	4.76			68	82.03

TABLE D-7-115 (Cont'd)

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BLEACHED HARDWOOD KRAFT MARKET PULP IN THE NORTHEAST

Basis: Fringe Benefit at 32% Hourly Rate

	Rate ($/hr)	Men per Shift	Shifts per day	Total Men	Cost ($000/yr w/Fringe)
DIRECT LABOR (cont'd)					
Pulp Dryer					
Foreman	6.73	1	1	1	17.04
Operator	5.81	1	3	4	58.94
Back Tender	5.02	1	3	4	50.86
Scale Man	5.02	1	3	4	50.86
Materials Handling	4.94	1	3	4	50.04
Pulp Tester	4.35	1	3	4	44.15
Shipping	4.94	2	3	8	100.08
Sub-Total	5.06			29	371.97
TOTAL DIRECT	4.80			116	1,413.59
INDIRECT LABOR					
Utilities - Steam					
Foreman	7.18	1	1	1	18.21
Recovery Boiler Operator	5.22	1	3	4	52.93
Power Boiler Operator	5.22	1	3	4	52.93
Helpers	4.71	2	3	8	95.46
Water Treatment (Matl. Handling)	4.94	1	1	1	12.51
Utilities - Power					
Foreman - incl. w/steam					
Operator	5.59	1	3	4	56.63
Utilities Water & Effluent Treatment					
Foreman	5.02	1	1	1	12.71
Operator Raw Water	4.71	1	3	4	47.73
Operator Waste Treatment	4.71	1	3	4	47.73
Helper	4.33	1	1	1	10.98
Sludge Disposal (driver)	4.56	2	2	4	46.23

TABLE D-7-115 (Cont'd)

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BLEACHED HARDWOOD KRAFT MARKET PULP IN THE NORTHEAST

Basis: Fringe Benefit at 32% Hourly Rate

	Rate ($/hr)	Men per Shift	Shifts per day	Total Men	Cost ($000/yr w/Fringe)
INDIRECT LABOR (Cont'd)					
Other Allocated					
Receiving	4.33	8	1	8	87.84
Instrumentation	5.13	2	1	2	26.00
Stores	4.45	2	1	2	22.54
Gate & Watchman	4.33	1	3	4	43.91
Shipping & Receiving Foreman	5.02	1	1	1	12.71
Quality Control	5.70	1	1	1	14.44
TOTAL INDIRECT	4.83			54	661.49

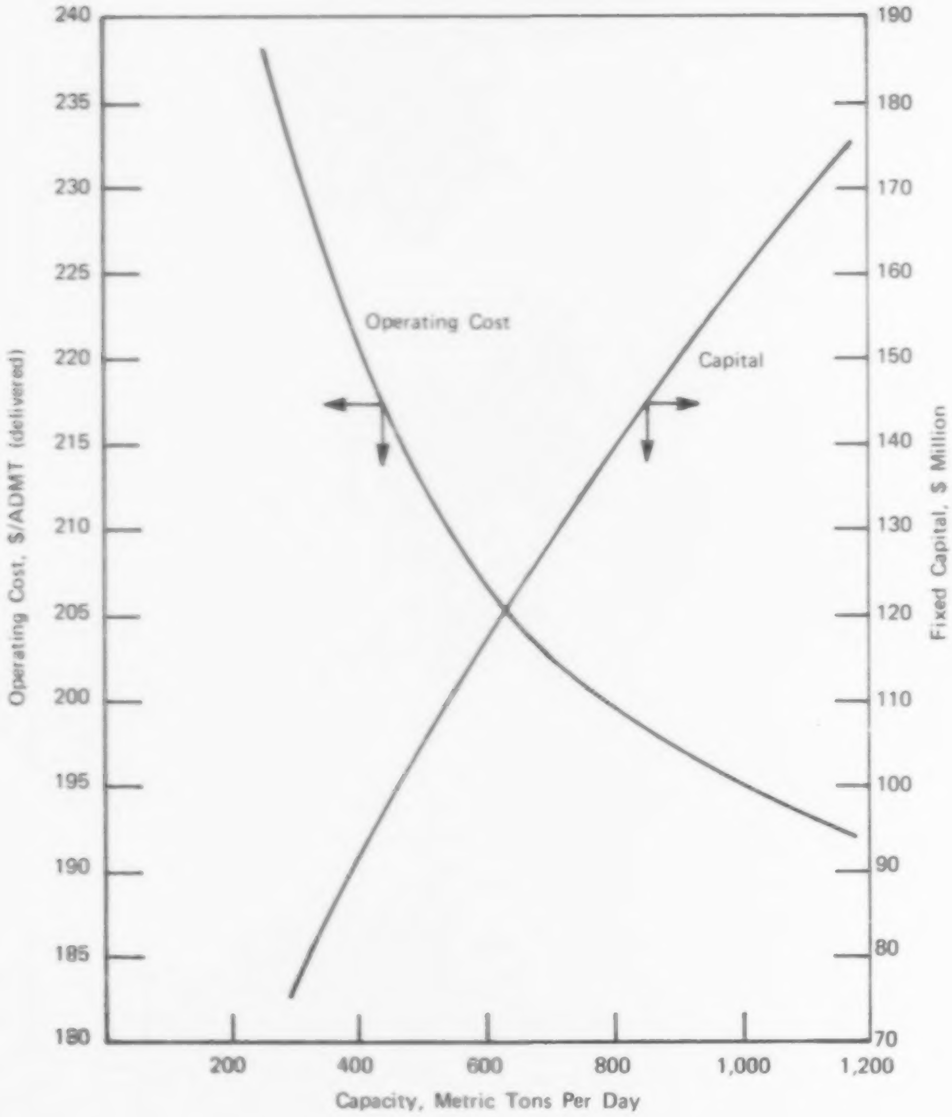

FIGURE D-7-34 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BLEACHED HARDWOOD KRAFT MARKET PULP (NORTHEAST)

TABLE D - 7 - 116

DESIGN BASIS

Functional Group	Market Pulp	Process	Asphalt dispersion of OCC, non-integrated
Grade	Unbl. kraft from OCC	Fiber Furnish	100% S/F (OCC)
Basis Weight	n.a.	Pulp Yield	86% AD pulp to AD S/F as rec'd.
Production	300 ADMT/day: 100,000 ADMT/yr	Mill Location	North Central
Net Operating Days	330/yr	Boundary Limits	S/F preparation through market pulp production

CAPITAL REQUIREMENTS* ($000)

Physical Plant	21,600	
Other Fixed Capital	2,200	
Total Fixed Capital		24,000
Working Capital		4,000
Total Capital Required		28,000

ENERGY REQUIREMENTS (per ADMT)

	Steam (kg)	Power (kWh)
Asphalt Dispersion	1,000	100
Drying	4,000	130
Other Process	–	80
Misc. & Auxiliaries	1,000	160
Total	6,000	470

*Totals may not add due to rounding.

OPERATING COST ($/ADMT)

Fiber Furnish	63.8	
Other Raw Materials	3.0	
Total Raw Materials Cost		66.8
Labor + Fringe @ 32% of Hourly Rate	11.2	
Supplies	5.6	
Energy	23.4	
Factory Overhead	5.7	
Total Conversion Costs		45.9
Capital-Related Costs		18.4
● Total Factory Operating Cost		131.1 ($118.9/ADST)
GS&A	5.6	
Freight Out	12.0	
Total Cost of Sales		17.6
● Total Delivered Cost		148.7 ($134.9/ADST)

NOTE: Models describing the manufacture of market pulp from waste paper are dissimilar to those previously presented for market pulp, in order to reflect the factors that influence the make or buy decision rather than the economy of scale of dried market pulp. Accordingly, the curves showing how capital and operating cost are related to capacity were developed for slush pulp rather than market pulp.

TABLE D-7-117

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF UNBLEACHED KRAFT MARKET PULP

Item	Cost ($000)
A.D. Secondary Fiber Plant	3,400
Pulp Dryer	7,000
Steam & Power Generation	3,400
Water & Effluent Treatment	2,000
Warehouses and other Buildings	1,500
TOTAL DIRECT PLANT COST (DPC)	17,300
Engineering, Const. Supervision & Fee @ 25% DPC	4,300
TOTAL PHYSICAL PLANT COST (PPC)	21,600
OTHER FIXED CAPITAL @ 10% PPC	2,200
TOTAL FIXED CAPITAL	23,800
Use	$24 MM*

---

* If flash dryer, use $18 million

Dryer less $3.5 MM

Steam & Power less $1 MM (no turbine, lower steam)

TABLE D-7-118

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF UNBLEACHED KRAFT MARKET PULP FROM OCC

Direct Labor	Total Men
A.D. Secondary Fiber	9
Pulp Dryer	17
Total Direct	26
Indirect Labor	32

Note: If flash dryer, use

18 Direct
28 Indirect
46 total

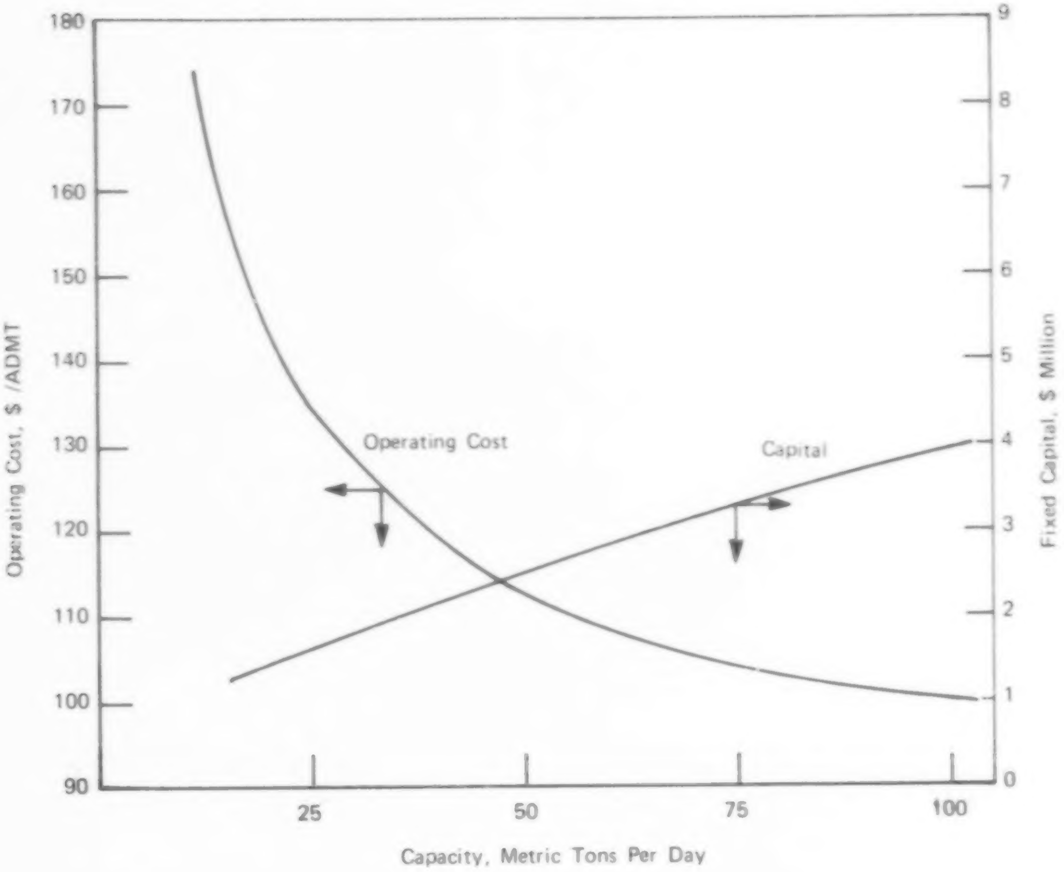

FIGURE D-7-35 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF SLUSH PULP FROM OCC (ASPHALT DISPERSION)

TABLE D-7-119

DESIGN BASIS

Functional Group	Market Pulp	Process	Newsprint de-inking, non-integrated
Grade	Groundwood (secondary newsprint)	Fiber Furnish	100% S/F (No. 1 news)
Basis Weight	n.a.	Pulp Yield	83% AD pulp to AD S/F as rec'd.
Production	300 ADMT/day; 100,000 ADMT/yr	Mill Location	Northeast
Net Operating Days	330/yr	Boundary Limits	S/F preparation through market pulp production

CAPITAL REQUIREMENTS* ($000)

Physical Plant	25,100	
Other Fixed Capital	2,500	
Total Fixed Capital		28,000
Working Capital		4,000
Total Capital Required		32,000

ENERGY REQUIREMENTS (per ADMT)

	Steam (kg)	Power (kWh)
De-inking	500	300
Drying	3,000	130
Misc. & Auxiliaries	600	80
Total	4,100	510

*Totals may not add due to rounding.

OPERATING COST ($/ADMT)

Fiber Furnish	54.5	
Other Raw Materials	8.6	
Total Raw Materials Cost		63.1
Labor + Fringe @ 32% of Hourly Rate	11.8	
Supplies	8.0	
Energy	28.7	
Factory Overhead	7.0	
Total Conversion Costs		55.5
Capital-Related Costs		21.4
● Total Factory Operating Cost		140.0 ($127.0/ADST)
GS&A	11.6	
Freight Out	12.0	
Total Cost of Sales		23.6
● Total Delivered Cost		163.6 ($148.4/ADST)

NOTE: Models describing the manufacture of market pulp from waste paper are dissimilar to those previously presented for market pulp, in order to reflect the factors that influence the make or buy decision rather than the economy of scale of dried market pulp. Accordingly, the curves showing how capital and operating cost are related to capacity were developed for slush pulp rather than market pulp.

TABLE D-7-120

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF GROUNDWOOD MARKET PULP

Item		Cost ($000)
Site Preparation		1,000
Deinking		4,400
Pulp Dryer		7,000
Steam & Power Generation		3,100
Water & Effluent Treatment		3,000
Warehouses and Other Buildings		1,600
TOTAL DIRECT PLANT COST (DPC)		20,100
Engineering, Const. Supervision & Fee @ 25% DPC		5,000
TOTAL PHYSICAL PLANT COST (PPC)		25,100
OTHER FIXED CAPITAL @ 10% PPC		2,500
TOTAL FIXED CAPITAL		27,600
	Use	$28 MM*

---

* If flash dryer, use $22 million

Dryer less $3.5 MM

Steam less $1.0 MM

TABLE D-7-121

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF GROUNDWOOD MARKET PULP FROM SECONDARY NEWSPRINT

Direct Labor	Total Men
Deinking	17
Pulp Dryer	17
Total Direct	34
Indirect Labor	32

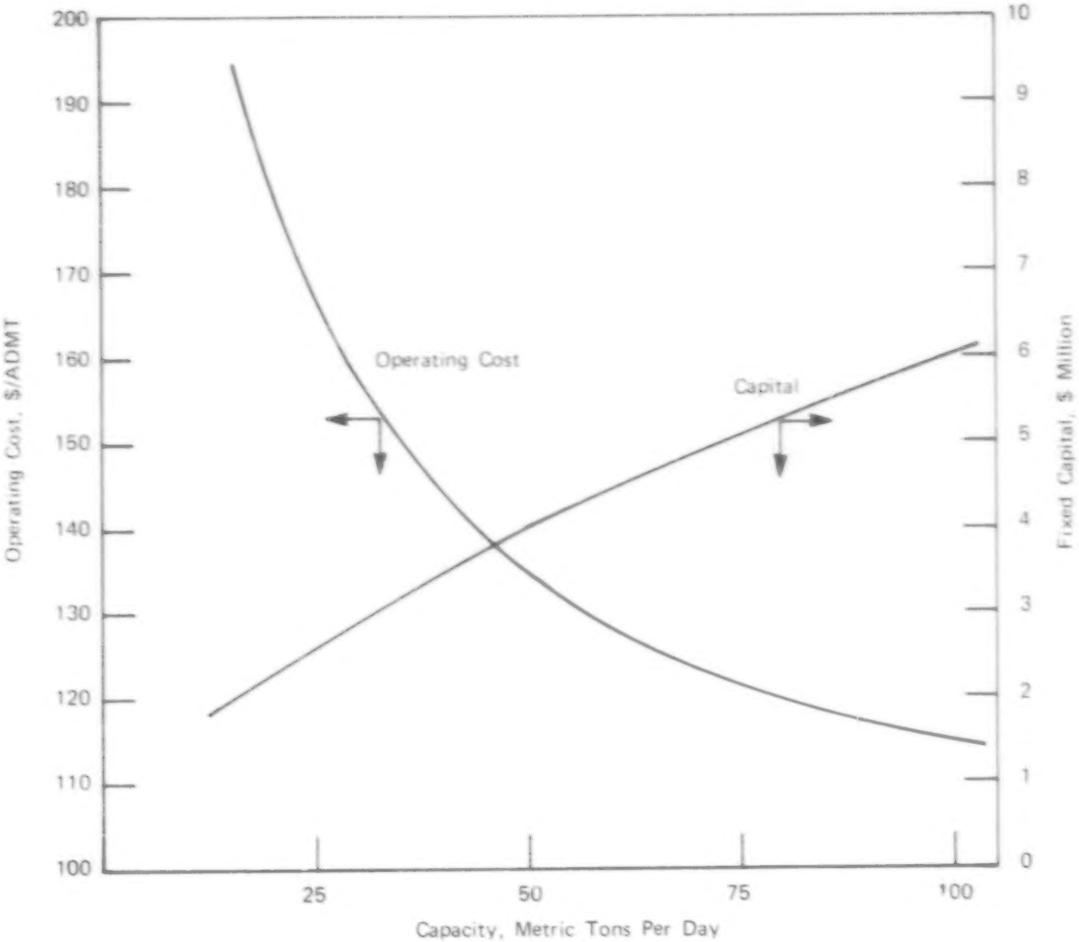

FIGURE D-7-36 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF SLUSH PULP FROM SECONDARY NEWSPRINT (DEINKING)

TABLE D - 7 - 122

DESIGN BASIS

Functional Group	General	Process	Continuous kraft pulping, C-E-D-E-D bleaching
Grade	Bl. kraft softwood slush pulp	Fiber Furnish	100% virgin fiber; softwood from 50% roundwood & 50% chips
Basis Weight	n.a.	Pulp Yield	42%
Production	730 ADMT/day; 252,000 ADMT/yr	Mill Location	Southeast
Net Operating Days	345/yr	Boundary Limits	Wood preparation through bleached pulp Production

CAPITAL REQUIREMENTS* (\$000)

Physical Plant	103,100	
Other Fixed Capital	10,300	
Total Fixed Capital		113,000
Working Capital		9,000
Total Capital Required		112,000

ENERGY REQUIREMENTS (per ADMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	120
Pulping	1,970	130
Bleaching	3,620	100
Power & Steam Gen. (incl. recovery & liquor prep.)	1,970	200
Effluent Treatment	–	40
Misc. & Auxiliaries	1,480	30
Total	9,040	620

OPERATING COST* (\$/ADMT)

Fiber Furnish	54.1	
Other Raw Materials	18.4	
Total Raw Materials Cost		72.5
Labor + Fringe @ 32% of Hourly Rate	14.1	
Supplies	7.9	
Energy	3.6	
Factory Overhead	3.6	
Total Conversion Costs		29.1
Capital-Related Costs		34.4
● Total Factory Operating Cost		136.0 (\$123.4/ ADST)
GS&A		
Freight Out		
Total Cost of Sales		n.a.
● Total Delivered Cost		n.a.

*Totals may not add due to rounding.

TABLE D-7-123

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BLEACHED SOFTWOOD KRAFT SLUSH PULP IN THE SOUTHEAST

Item	Cost ($000) Bldgs.	Equip.	Total
Site Preparation	3,100	-	3,100
Wood Yard & Wood Preparation	2,000	7,500	9,500
Digester*	3,000	9,300	12,300
Evaporators	400	1,200	1,600
Causticizing	1,200	5,500	6,700
Recovery Boiler	800	13,800	14,600
Power Boiler	1,100	8,400	9,500
Turbine Generator	200	2,400	2,600
Bleach Plant & Chemical Prep.	1,600	9,600	11,200
Power Distribution	-	1,300	1,300
Steam Distribution	-	1,400	1,400
Water Treatment	400	1,600	2,000
Effluent Treatment	100	4,300	4,400
Shops, Stores & Mill Services	500	1,800	2,300
TOTAL DIRECT PLANT COST (DPC)	14,400	68,100	82,500
Engineering, Const. Supervision & Fee @ 25% DPC	3,500	17,100	20,600
TOTAL PHYSICAL PLANT COST (PPC)	17,900	85,200	103,100
OTHER FIXED CAPITAL @ 10% PPC	1,800	8,500	10,300
TOTAL FIXED CAPITAL	19,700	93,700	113,400
Use	$20 MM	$94 MM	$113 MM

NOTE: Totals may not add due to rounding

*Includes tall oil recovery

TABLE D-7-124

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BLEACHED SOFTWOOD KRAFT SLUSH PULP IN THE SOUTHEAST

Direct Labor		Total Men*
Wood Yard and Wood Preparation		22
Pulp Mill		68
	Total Direct	90
Indirect Labor		42

*For detailed labor schedule, see bleached hardwood kraft market pulp in the Northeast. (Adjust pulp yield and wood density, and delete the drying process.)

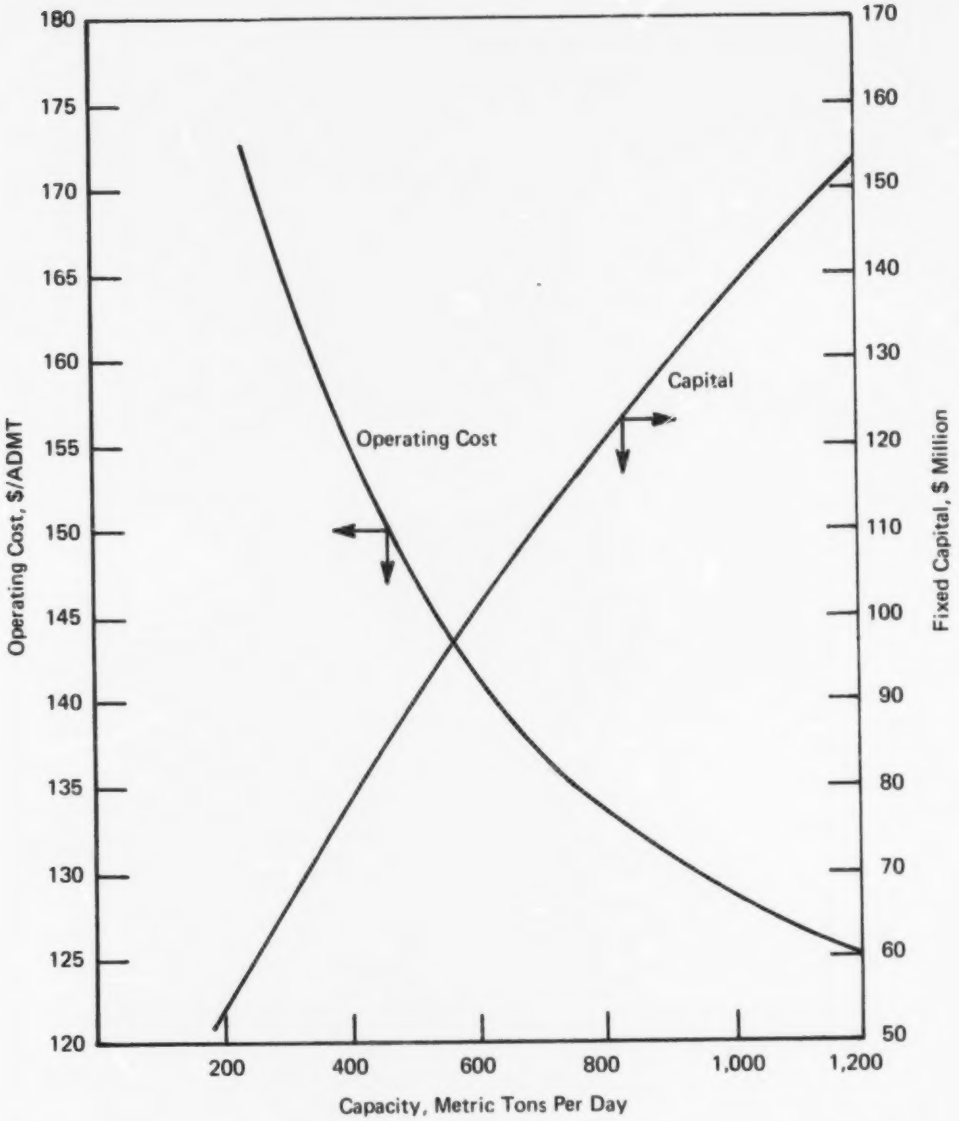

FIGURE D-7-37 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BLEACHED SOFTWOOD KRAFT SLUSH PULP (SOUTHEAST)

TABLE D - 7 - 125

DESIGN BASIS

Functional Group	General	Process	Continuous kraft pulping, C-E-D-E-D bleaching
Grade	Bl. kraft softwood slush pulp	Fiber Furnish	100% virgin fiber; softwood from 50% roundwood & 50% chips
Basis Weight	n.a.	Pulp Yield	42%
Production	730 ADMT/day; 252,000 ADMT/yr	Mill Location	Northeast
Net Operating Days	345/yr	Boundary Limits	Wood preparation through bleached pulp Production

CAPITAL REQUIREMENTS*
($000)

Physical Plant	103,100	
Other Fixed Capital	10,300	
Total Fixed Capital		113,000
Working Capital		11,000
Total Capital Required		124,000

ENERGY REQUIREMENTS
(per ADMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	120
Pulping	1,970	130
Bleaching	3,620	100
Power & Steam Gen. (incl. recovery & liquor prep.)	1,970	200
Effluent Treatment	–	40
Misc. & Auxiliaries	1,480	30
Total	9,040	620

OPERATING COST*
($/ADMT)

Fiber Furnish	86.9	
Other Raw Materials	20.4	
Total Raw Materials Cost		107.3
Labor + Fringe @ 32% of Hourly Rate	12.4	
Supplies	7.9	
Energy	7.7	
Factory Overhead	3.6	
Total Conversion Costs		31.5
Capital-Related Costs		34.4
• Total Factory Operating Cost		173.2 ($157.1/ ADST)
GS&A		
Freight Out		
Total Cost of Sales		n.a.
• Total Delivered Cost		n.a.

*Totals may not add due to rounding.

TABLE D-7-126

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BLEACHED SOFTWOOD KRAFT SLUSH PULP IN THE NORTHEAST

Item	Cost ($000)		
	Bldgs.	Equip.	Total
Site Preparation	3,100	-	3,100
Wood Yard & Wood Preparation	2,000	7,500	9,500
Digester	3,000	9,300	12,300
Evaporators	400	1,200	1,600
Causticizing	1,200	5,500	6,700
Recovery Boiler	800	13,800	14,600
Power Boiler	1,100	8,400	9,500
Turbine Generator	200	2,400	2,600
Bleach Plant & Chemical Prep.	1,600	9,600	11,200
Power Distribution	-	1,300	1,300
Steam Distribution	-	1,400	1,400
Water Treatment	400	1,600	2,000
Effluent Treatment	100	4,300	4,400
Shops, Stores & Mill Services	500	1,800	2,300
TOTAL DIRECT PLANT COST (DPC)	14,400	68,100	82,500
Engineering, Const. Supervision & Fee @ 25% DPC	3,500	17,100	20,600
TOTAL PHYSICAL PLANT COST (PPC)	17,900	85,200	103,100
OTHER FIXED CAPITAL @ 10% PPC	1,800	8,500	10,300
TOTAL FIXED CAPITAL	19,700	93,700	113,400
Use	$20 MM	$94 MM	$113 MM

NOTE: Totals may not add due to rounding

TABLE D-7-127

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BLEACHED SOFTWOOD KRAFT SLUSH PULP IN THE NORTHEAST

Direct Labor	Total Men*
Wood Yard and Wood Preparation	25
Pulp Mill	68
Total Direct	93
Indirect Labor	42

*For detailed labor schedule, see bleached hardwood kraft market pulp in the Northeast. (Adjust for pulp yield and wood density, and delete the drying process.)

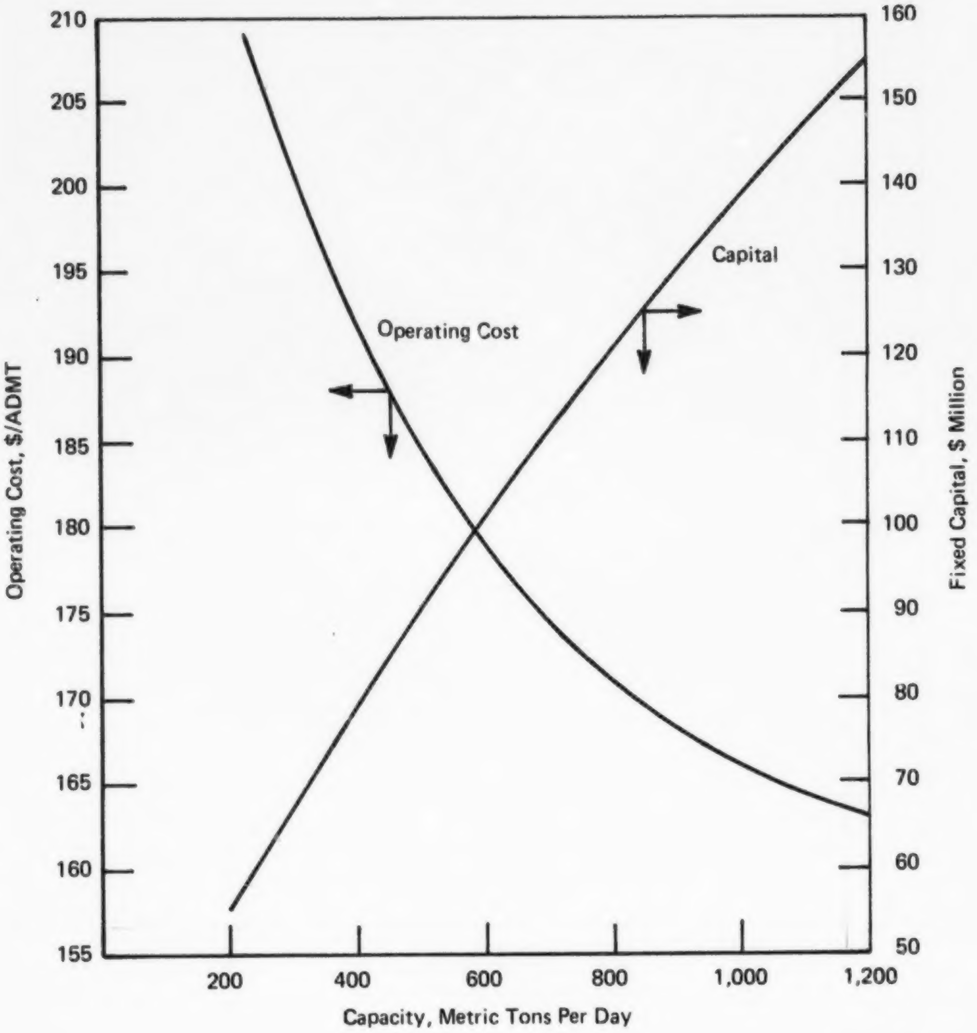

FIGURE D-7-38 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BLEACHED SOFTWOOD KRAFT SLUSH PULP (NORTHEAST)

TABLE D-7-128

DESIGN BASIS

Functional Group	General	Process	Continuous kraft pulping; C-E-D-E-D bleaching
Grade	Bl. hardwood kraft slush pulp	Fiber Furnish	100% virgin fiber; hardwood from 50/50 roundwood/chips
Basis Weight	n.a.	Pulp Yield	Bleached – 44%
Production	730 ADMT/day; 252,000 ADMT/yr	Mill Location	Southeast
Net Operating Days	345/yr	Boundary Limits	Wood preparation through bleached pulp

CAPITAL REQUIREMENTS*
($000)

Physical Plant	95,700	
Other Fixed Capital	9,600	
Total Fixed Capital		105,000
Working Capital		8,000
Total Capital Required		113,000

ENERGY REQUIREMENTS
(per ADMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	110
Pulping	1,810	115
Bleaching	3,290	95
Power & Steam Gen. (incl. recovery & liquor prep.)	1,810	180
Effluent Treatment	–	20
Misc. & Auxiliaries	1,350	45
Total	8,260	565

OPERATING COST*
($/ADMT)

Fiber Furnish	40.2	
Other Raw Materials	17.4	
Total Raw Materials Cost		57.7
Labor + Fringe @ 32% of Hourly Rate	12.7	
Supplies	7.9	
Energy	3.8	
Factory Overhead	3.5	
Total Conversion Costs		27.7
Capital-Related Costs		33.1
● Total Factory Operating Cost		118.5 ($107.5/ADST)
GS&A		
Freight Out		
Total Cost of Sales		n.a.
● Total Delivered Cost		n.a.

*Totals may not add due to rounding.

TABLE D-7-129

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BLEACHED HARDWOOD KRAFT SLUSH PULP IN THE SOUTHEAST

	Cost ($000)		
Item	Bldgs.	Equip.	Total
Site Preparation	3,000	-	3,000
Wood Yard & Wood Prep.	1,700	6,200	7,900
Pulp Mill	2,600	8,100	10,700
Evaporators	400	1,100	1,500
Causticizing	1,100	4,900	6,000
Recovery Boiler	800	13,800	14,600
Power Boiler	800	7,000	7,800
Turbine Generator	200	2,300	2,500
Bleach Plant & Chemical Prep.	1,600	9,600	11,200
Power Distribution	-	1,300	1,300
Steam Distribution	-	1,400	1,400
Water Treatment	400	1,600	2,000
Effluent Treatment	100	4,300	4,400
Shops, Stores & Mill Services	500	1,800	2,300
TOTAL DIRECT PLANT COST (DPC)	13,200	63,400	76,600
Engineering, Const. Supervision & Fee @ 25% DPC	3,200	15,900	19,100
TOTAL PHYSICAL PLANT COST (PPC)	16,400	79,300	95,700
OTHER FIXED CAPITAL @ 10% PPC	1,600	8,000	9,600
TOTAL FIXED CAPITAL	18,000	87,300	105,300
		Use	$105 MM

TABLE D-7-130

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BLEACHED HARDWOOD KRAFT SLUSH PULP IN THE SOUTHEAST

Direct Labor		Total Men*
Wood Yard and Wood Preparation		19
Pulp Mill		68
	Total Direct	87
Indirect Labor		39

*For detailed labor schedule, see bleached hardwood kraft market pulp in the Northeast and delete the drying process.

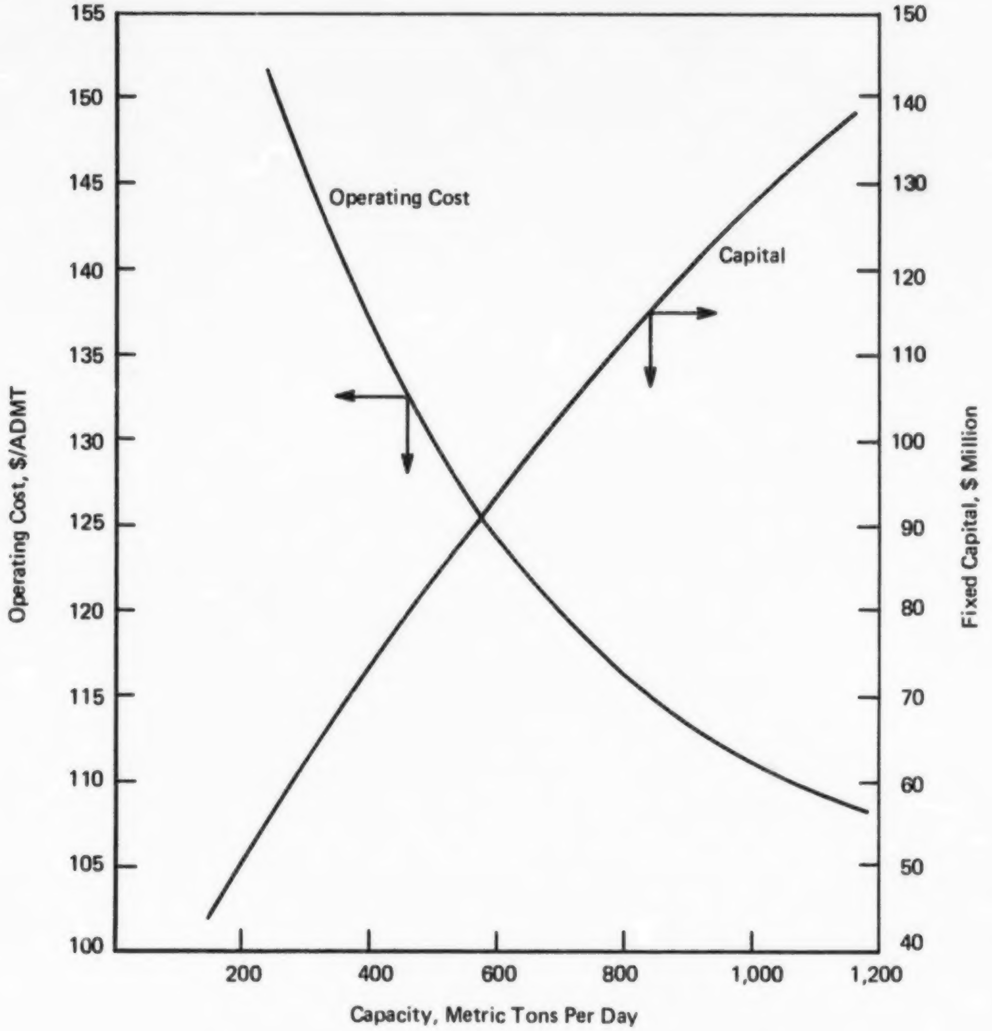

FIGURE D-7-39 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BLEACHED HARDWOOD KRAFT SLUSH PULP (SOUTHEAST)

TABLE D-7-131

DESIGN BASIS

Functional Group	General	Process	Continuous kraft pulping; C-E-D-E-D bleaching
Grade	Bl kraft hardwood slush pulp	Fiber Furnish	100% virgin fiber; hardwood from 50/50 roundwood/chips
Basis Weight	n.a.	Pulp Yield	Bleached – 44%
Production	730 ADMT/day; 252,000 ADMT/yr	Mill Location	Northeast
Net Operating Days	345/yr	Boundary Limits	Wood preparation through bleached pulp

CAPITAL REQUIREMENTS*
($000)

Physical Plant	95,700	
Other Fixed Capital	9,600	
Total Fixed Capital		105,000
Working Capital		9,000
Total Capital Required		114,000

ENERGY REQUIREMENTS
(per ADMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	110
Pulping	1,810	115
Bleaching	3,290	95
Power & Steam Gen. (incl. recovery & liquor prep.)	1,810	180
Effluent Treatment	–	20
Misc. & Auxiliaries	1,350	45
Total	8,260	565

OPERATING COST*
($/ADMT)

Fiber Furnish	55.1	
Other Raw Materials	17.4	
Total Raw Materials Cost		72.5
Labor + Fringe @ 32% of Hourly Rate	12.0	
Supplies	7.9	
Energy	8.2	
Factory Overhead	3.0	
Total Conversion Costs		31.1
Capital-Related Costs		33.1
• Total Factory Operating Cost		136.7 ($124.0/ADST)
GS&A		
Freight Out		
Total Cost of Sales		n.a.
• Total Delivered Cost		n.a.

*Totals may not add due to rounding.

TABLE D-7-132

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF BLEACHED HARDWOOD KRAFT SLUSH PULP IN THE NORTHEAST

Item	Cost ($000) Bldgs.	Equip.	Total
Site Preparation	3,000	-	3,000
Wood Yard & Wood Prep.	1,700	6,200	7,900
Pulp Mill	2,600	8,100	10,700
Evaporators	400	1,100	1,500
Causticizing	1,100	4,900	6,000
Recovery Boiler	800	13,800	14,600
Power Boiler	800	7,000	7,800
Turbine Generator	200	2,300	2,500
Bleach Plant & Chemical Prep.	1,600	9,600	11,200
Power Distribution	-	1,300	1,300
Steam Distribution	-	1,400	1,400
Water Treatment	400	1,600	2,000
Effluent Treatment	100	4,300	4,400
Shops, Stores & Mill Services	500	1,800	2,300
TOTAL DIRECT PLANT COST (DPC)	13,200	63,400	76,600
Engineering, Const. Supervision & Fee @ 25% DPC	3,200	15,900	19,100
TOTAL PHYSICAL PLANT COST (PPC)	16,400	79,300	95,700
OTHER FIXED CAPITAL @ 10% PPC	1,600	8,000	9,600
TOTAL FIXED CAPITAL	18,000	87,300	105,300
		Use	$105 MM

TABLE D-7-133

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF BLEACHED HARDWOOD KRAFT SLUSH PULP IN THE NORTHEAST

Direct Labor	Total Men*
Wood Yard and Wood Preparation	19
Pulp Mill	68
Total Direct	87
Indirect Labor	39

*For detailed labor schedule, see bleached hardwood kraft market pulp in the Northeast and delete the drying process.

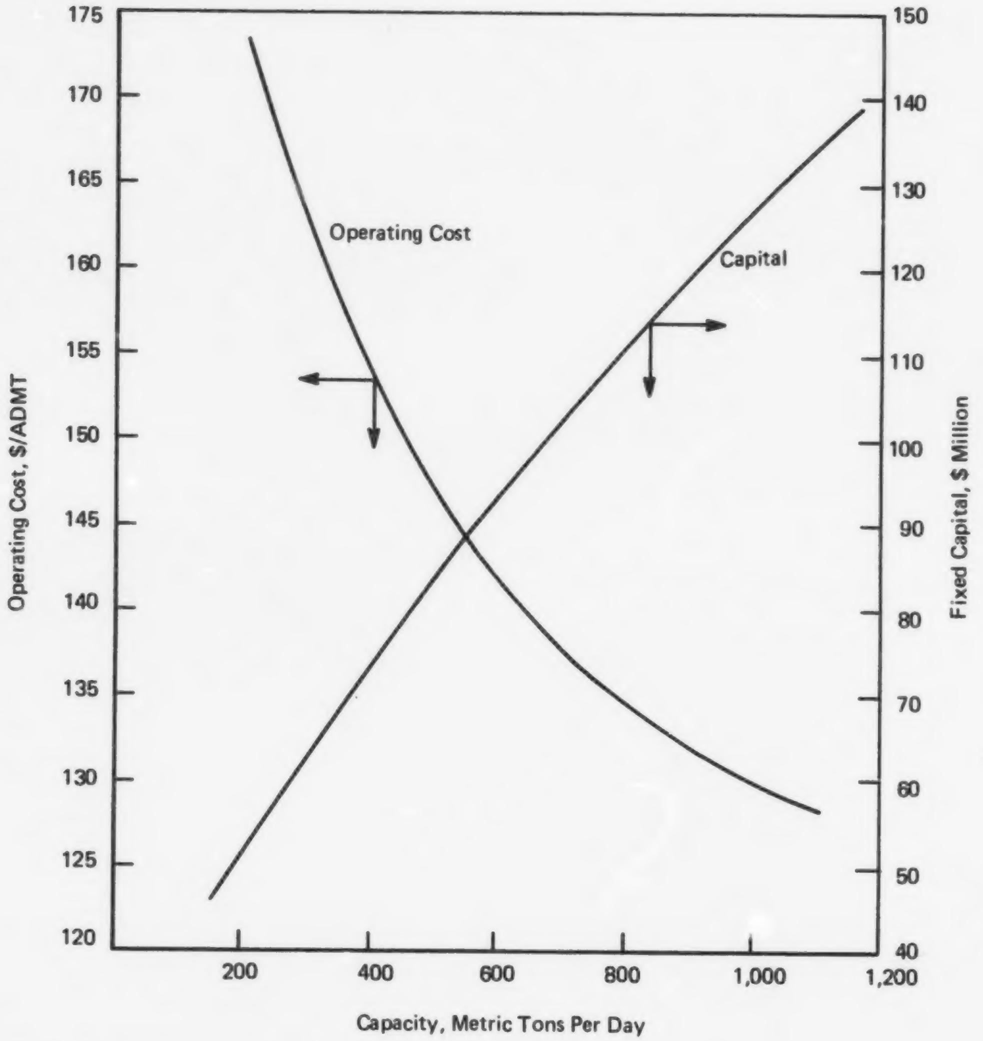

FIGURE D-7-40 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF BLEACHED HARDWOOD KRAFT SLUSH PULP (NORTHEAST)

TABLE D-7-134

DESIGN BASIS

Functional Group	General	Process	Continuous kraft pulping
Grade	Unbl. SW kraft slush pulp	Fiber Furnish	100% virgin SW fiber from 50/50 roundwood/chips
Basis Weight	n.a.	Pulp Yield	48%
Production	730 ADMT/day; 252,000 ADMT/yr	Mill Location	Southeast
Net Operating Days	345/yr	Boundary Limits	Wood preparation through pulping

CAPITAL REQUIREMENTS* ($000)

Physical Plant	76,400	
Other Fixed Capital	7,700	
Total Fixed Capital		84,000
Working Capital		6,000
Total Capital Required		90,000

ENERGY REQUIREMENTS (per ADMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	107
Digester (incl. washing & screening)	1,734	111
Power/Steam Gen. (incl. recovery & liquor prep.)	1,734	173
Effluent Treatment	–	20
Water Supply	–	20
Misc. & Auxiliaries	867	19
Total	4,335	450

OPERATING COST* ($/ADMT)

Fiber Furnish	46.4	
Other Raw Materials	0	
Total Raw Materials Cost		46. 4
Labor + Fringe @ 32% of Hourly Rate	10.2	
Supplies	6.4	
Energy	(0.8)	
Factory Overhead	3.4	
Total Conversion Costs		19.4
Capital-Related Costs		25.6
• Total Factory Operating Cost		91.3 ($82.8/ADST)
GS&A	Not applicable	
Freight Out	–	
Total Cost of Sales		–
• Total Delivered Cost		

*Totals may not add due to rounding.

TABLE D-7-135

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF UNBLEACHED SOFTWOOD KRAFT SLUSH PULP

Item	Cost $(000)		
	Bldgs.	Equip.	Total
Site Preparation	2,900	-	2,900
Wood Yard & Wood Preparation	1,800	6,900	8,700
Digester	2,800	8,600	11,400
Evaporators	400	1,100	1,500
Causticizing	1,100	5,100	6,200
Recovery Boiler	800	12,700	13,500
Power Boiler	700	5,400	6,100
Turbine Generator	200	2,300	2,500
Power Distribution	-	1,100	1,100
Steam Distribution	-	900	900
Water Treatment	300	1,000	1,300
Effluent Treatment	100	2,800	2,900
Shops, Stores & Mill Services	400	1,700	2,100
TOTAL DIRECT PLANT COST (DPC)	11,500	49,600	61,100
Engineering, Const. Supervision & Fee @ 25% DPC	2,900	12,400	15,300
TOTAL PHYSICAL PLANT COST (PPC)	14,400	62,000	76,400
OTHER FIXED CAPITAL @ 10% PPC	1,500	6,200	7,700
TOTAL FIXED CAPITAL	15,900	68,200	84,100
Use	$16 MM	$68 MM	$84 MM

TABLE D-7-136

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF UNBLEACHED SOFTWOOD KRAFT SLUSH PULP

Direct Labor	Total Men*
Wood Yard and Wood Preparation	18
Pulp Mill	39
Total Direct	57
Indirect Labor	42

*For detailed labor schedule, see bleached hardwood kraft market pulp in the Northeast. (Adjust for pulp yield and wood density, and delete bleaching and drying processes.)

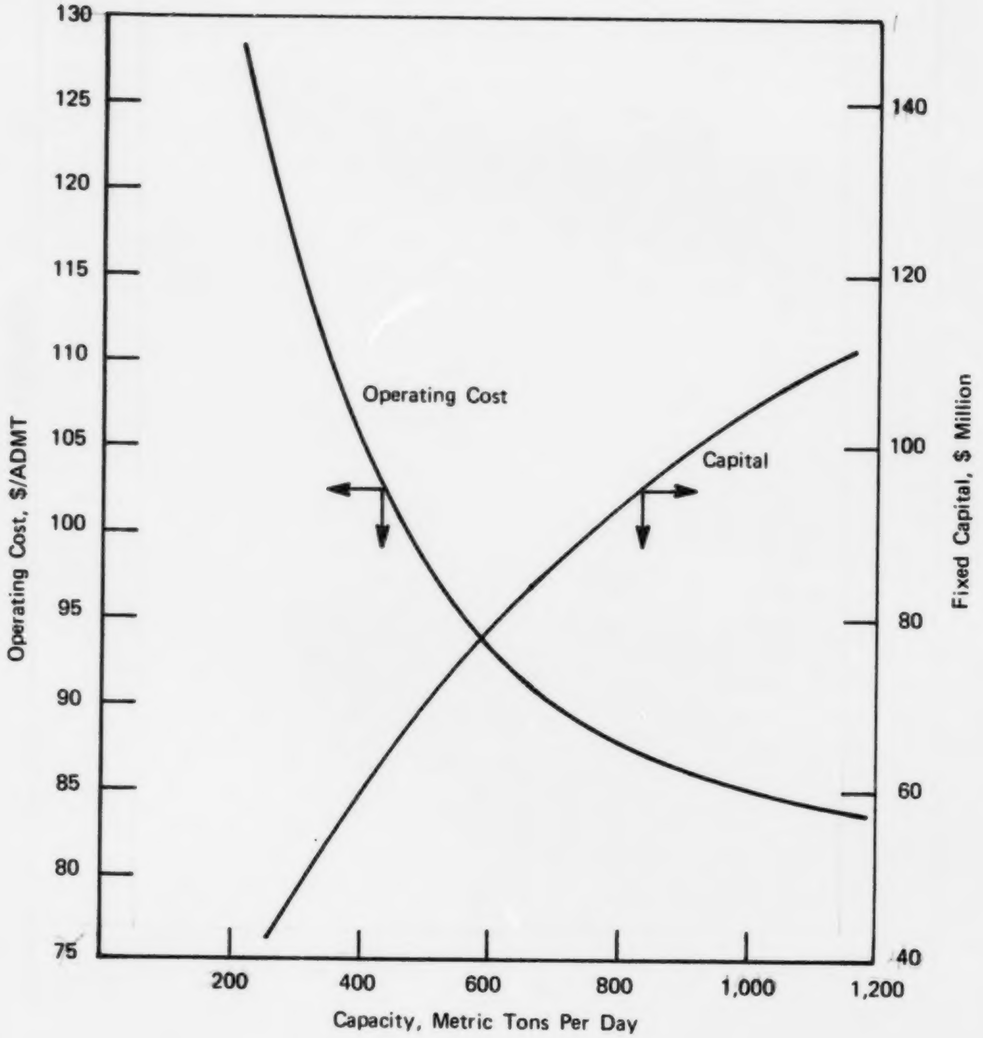

FIGURE D-7-41 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF UNBLEACHED SOFTWOOD KRAFT SLUSH PULP (SOUTHEAST)

TABLE D - 7 - 137

DESIGN BASIS

Functional Group	General	Process	Stone groundwood
Grade	Groundwood slush pulp	Fiber Furnish	100% softwood (spruce/fir)
Basis Weight	n.a.	Pulp Yield	Unbleached – 95%
Production	400 ADMT/day; 136,000 ADMT/yr	Mill Location	Northeast
Net Operating Days	340/yr	Boundary Limits	Wood preparation through pulping

CAPITAL REQUIREMENTS* (\$000)

Physical Plant	20,100	
Other Fixed Capital	2,000	
Total Fixed Capital		22,000
Working Capital		3,000
Total Capital Required		25,000

ENERGY REQUIREMENTS (per ADMT)

	Steam (kg)	Power (kWh)
Wood Preparation	–	25
Pulping	–	1,350
Effluent Treatment	–	15
Misc. & Auxiliaries	140	10
Total	140	1,400

OPERATING COST* (\$/ADMT)

Fiber Furnish	37.7	
Other Raw Materials	2.0	
Total Raw Materials Cost		39.7
Labor + Fringe @ 32% of Hourly Rate	12.9	
Supplies	3.5	
Energy	10.8	
Factory Overhead	5.7	
Total Conversion Costs		32.9
Capital-Related Costs		12.4
● Total Factory Operating Cost		85.1 (\$77.2/ ADST)
GS&A		
Freight Out		
Total Cost of Sales		n.a.
● Total Delivered Cost		n.a.

*Totals may not add due to rounding.

TABLE D-7-138

ESTIMATED FIXED CAPITAL REQUIREMENT FOR THE MANUFACTURE OF GROUNDWOOD SLUSH PULP

Item	Cost ($000)
Site Preparation	600
Wood Yard	3,200
Stone Groundwood	9,500
Stock Preparation	-
Paper Machine (roll finishing & winding)	-
Steam/Power Generation & Dist.	1,000
Water & Effluent Treatment	1,500
Auxiliary Equipment & Buildings	300
TOTAL DIRECT PLANT COST (DPC)	16,100
Engineering, Const. Supervision & Fee @ 25% DPC	4,000
TOTAL PHYSICAL PLANT COST (PPC)	20,100
OTHER FIXED CAPITAL @ 10% PPC	2,000
TOTAL FIXED CAPITAL	22,100
Use	$22 MM

TABLE D-7-139

ESTIMATED HOURLY LABOR REQUIREMENTS FOR THE MANUFACTURE OF GROUNDWOOD SLUSH PULP FROM 100% VIRGIN FIBER

Shift Position	Men Per Shift	Shifts Per Day	Total Men
DIRECT LABOR			
Wood Yard and Wood Preparation:			
Foreman	1	2	2
Equipment Operator	3	2	6
Drum Operator	2	2	4
Utility	1	2	2
Laborer	4	2	8
Stone Groundwood:			
Foreman	1	3	4
Stock Runner	1	3	4
Stone Sharpenter	2	3	8
Grinder Man	2	3	8
Loader	4	3	16
Laborer	2	3	8
Total Direct			70
INDIRECT LABOR			
Receiving Foreman	1	1	1
Receiving crew	4	1	4
Material Handling	3	3	12
Utility	5	2	10
Effluent & Water Treatment	1	3	4
Sludge Disposal	1	2	2
Tester	1	1	1
Total Indirect			34

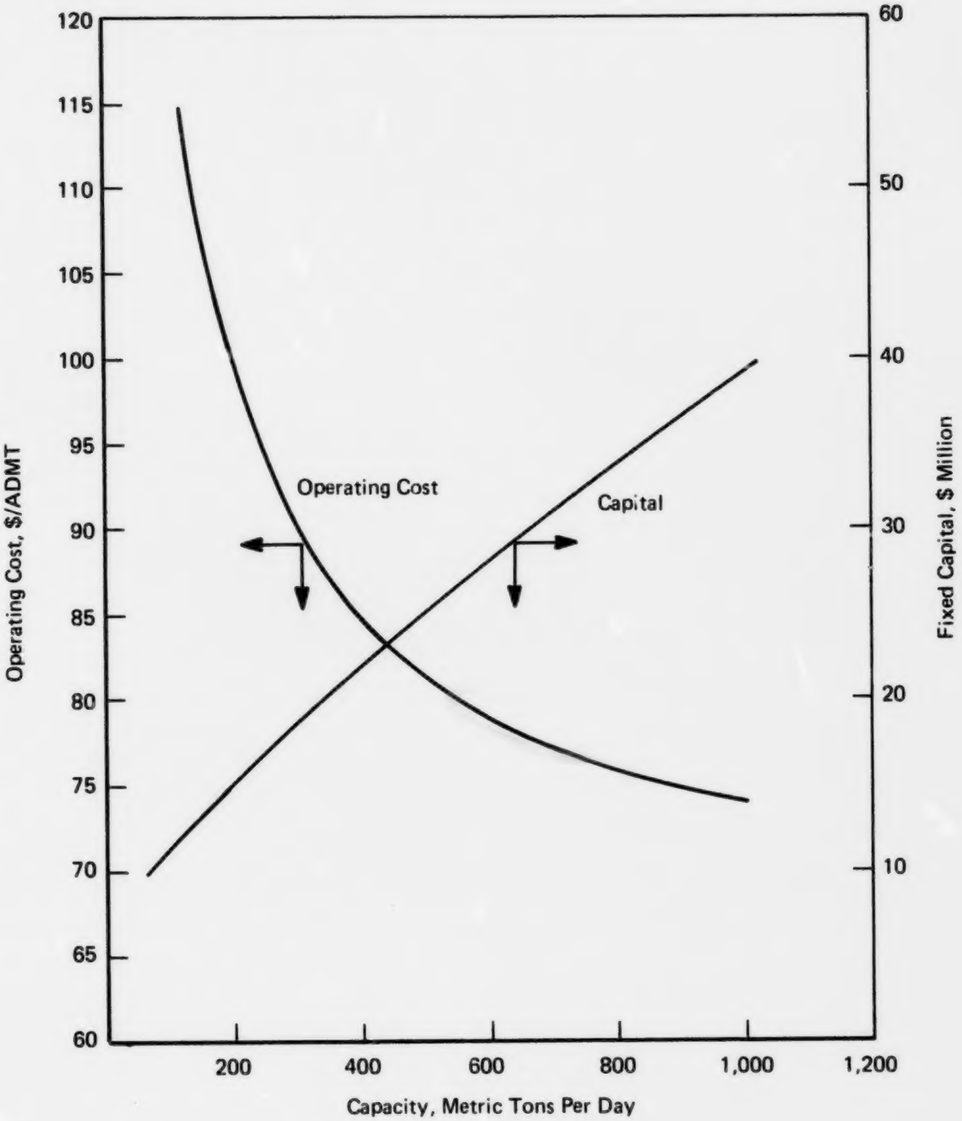

FIGURE D-7-42 OPERATING COST AND TOTAL FIXED CAPITAL VERSUS PLANT CAPACITY FOR THE MANUFACTURE OF GROUNDWOOD SLUSH PULP

APPENDIX D-8

MOISTURE CONTENT AND FIBER SUPPLY FOR VIRGIN AND BLENDED MODELS

Product	Moisture Content	Fiber Supply for Virgin and Blended Models
Linerboard	8%	Pulpwood
Corrugating Medium	7%	Pulpwood
Newsprint	7%	Slush Pulp
Groundwood Papers	7%	Slush Pulp
Tissue	7%	Slush Pulp
Folding Boxboard	7%	Slush Pulp
Bond Paper	7%	Slush Pulp
Book Paper	7%	Slush Pulp
Bag Paper	8%	Slush Pulp
Tube Paper	8%	Slush Pulp
Roofing Felt	4.7%	Pulpwood
Market Pulp	10%	Pulpwood

APPENDIX D-9

SAMPLE CALCULATION OF SENSITIVITY CHART

Sample Calculation: Sensitivity of the Manufacturing cost of Unbleached Kraft Liner to Key Variables (see Figure D-9-1)

1. Scale of Operations:

Best Guess: 910 MTPD
Possible High: 1370 MTPD, + 50% from best guess
Possible Low: 545 MTPD, - 40% from best guess

Curves of operating cost versus capacity are presented in Appendix D; Figure D-9-1 deals with unbleached kraft liner. In preparing estimates of operating cost versus capacity, we considered raw materials, operating and packaging supplies, utilities, and cost of sales as unit costs independent of mill capacity. Direct and indirect labor, maintenance labor and supplies, factory overhead, and capital-related costs were estimated for each model. From Figure D-9-1, operating costs for unbleached kraft liner at 545 MTPD (-40%) are $150/MDMT, and at 1370 MTPD (+50%) they are $132/MDMT. These two points are plotted to form Line 1 in the sensitivity chart. This relationship is indicated as linear for simplicity; more accurately, it should be shown as a curve passing through the two end points and the origin.

2. Delivered Cost of Fiber (Pulpwood):

Best Guess: $31/cunit (weighted average of softwood and hardwood)
Possible High: $37/cunit, +20% from best guess
Possible Low: $25/cunit, -20% from best guess

From the operating cost statement for unbleached kraft liner (Table IX-E-3), the total cost of pulpwood is $43.8/MDMT of product. A 20% variation is equal to $8.8/MDMT, giving a range in delivered cost of $128.6 to $146.2/MDMT. These points form Line 2.

3. Fixed Capital:

Best Guess: $110 million
Possible High: $138 million, + 25% from best guess
Possible Low: $99 million, - 10% from best guess

From the operating cost statement, total capital-related costs are $26.9/MDMT of product, and are directly proportional to total capital. A +25% variation is equal to $6.7/MDMT, or a delivered cost of $144.1/MDMT; a -20% variation is equal to $2.7/MDMT, or a delivered cost of $134.7/MDMT. These two points form Line 3.

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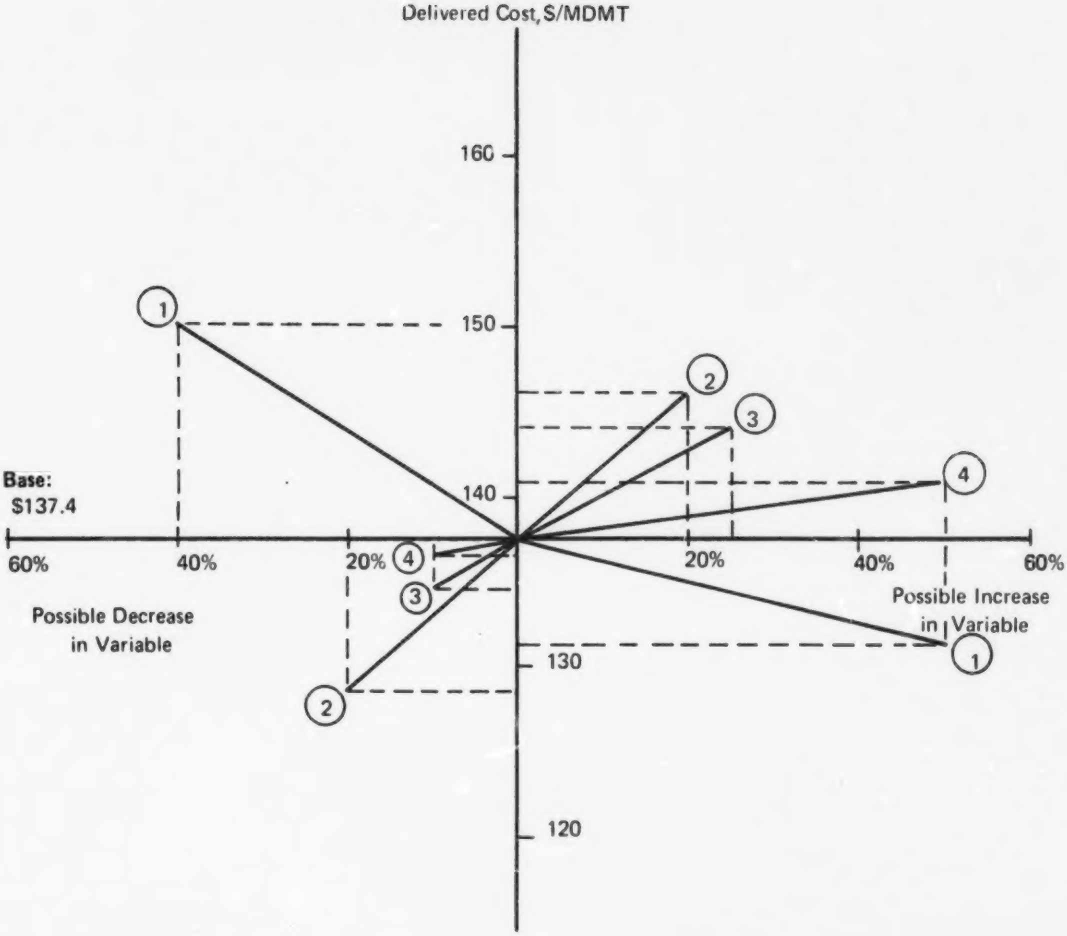

KEY VARIABLES	Percent Variation	Best Guess	Possible High	Possible Low
1. Scale of Operations, MTPD	+50, −40	910	1370	545
2. Delivered Cost of Fiber,* $/Cunit	+20, −20	31	37	25
3. Fixed Capital, $ Million	+25, −10	110	138	99
4. Cost of Energy, $/MMBtu	+50, −10	1.0	1.5	0.9

*Average Pulpwood Cost

FIGURE D-9-1 SENSITIVITY OF THE MANUFACTURING COST OF UNBLEACHED KRAFT LINER TO KEY VARIABLES

4. Cost of Energy:

Best Guess: $1.0/MM Btu
Possible High: $1.5/MM Btu, +50% from best guess
Possible Low: $0.9/MM Btu, -10% from best guess

For simplicity, we have assumed that the cost of purchased power would vary directly with fuel cost. From the operating cost statement, the total cost of fuel and purchased power is $6.9/MDMT. A +50% variation is equal to $3.5/MDMT, or a delivered cost of $140.9/MDMT. A -10% variation is equal to $0.7/MDMT, or a delivered cost of $136.7/MDMT. These two points form Line 4.

APPENDIX E-1

GENERAL TERMS AND ABBREVIATIONS

AD. Air dry. AD pulp contains 10% moisture.

ADMT. Air-dried metric ton. (See p. IX-A-2.)

BD. Bone dry – i.e., 0% moisture.

BK. Bleached kraft pulp.

Bogus Medium. Corrugating medium manufactured from secondary fiber.

Broker. One who buys waste paper stock from dealers and others. (See p. V-19.)

CF. Chemical fiber. Same as CP.

Collectable tonnage. The quantity of waste paper economically available for recovery. (See p. V-2.)

Consumption rate. The amount of waste paper consumed, as a percentage of the total papermaking fiber used. Also called "furnish rate" and "recycling rate." (See p. V-2.)

Cord. 128 cubic feet of stacked roundwood with bark. An average cord of softwood is equivalent to 0.83 cunit; an average cord of hardwood is equivalent to 0.79 cunit.

CP. Chemical pulp. Same as CF.

Cunit. 100 cubic feet of solid wood.

DI. Deinking. A category of high-quality waste paper which, after appropriate treatment for ink removal, yields a replacement for virgin fiber.

"G" Factor. Generation factor. (See p. VII-8.)

GW. Groundwood (or other mechanical) pulp.

HW. Hardwood; may refer to grade of either pulp or wood.

Integrated. Refers to virgin fiber pulping and papermaking operations combined at a single plant location.

Jumbo rolls. Interim product in converted tissue manufacture.

Jute linerboard. Linerboard manufactured from secondary fiber.

Man-year. Equivalent to 2200 man-hours.

Market pulp. Dried pulp mill product sold to non-integrated paper and board manufacturers. (See p. III-79.)

MDMT. Machine-dried metric ton. (See p. IX-A-2.)

Mixed papers. A category of waste paper. (See p. V-8 ff.)

MSW. Municipal solid waste.

MT. Metric ton (1000 kilograms, or approximately 2200 pounds).

News. Old newspapers, a category of waste paper. Also called "old news." (See p. V-8 ff.)

Non-integrated. Refers to paper or board making operations not located with a virgin fiber pulping operation but possibly including on-site pulping of secondary fiber.

NSSC. Neutral sulfite semi-chemical, a specific wood pulping process and pulp grade.

OCC. Old corrugated containers, a category of waste paper. (See p. V-8 ff.)

PCC. Precipitated calcium carbonate.

PCF. Population concentration factor. (See p. VII-4.)

PPC. Physical plant cost.

Primary pickup. Cost of waste paper at its source. (See p. VI-15.)

P/S. Pulp substitute, a category of high-quality waste paper which requires a nominal amount of treatment prior to use as a replacement for virgin fiber. (See p. V-8 ff.)

Recovery rate. Amount of waste paper collected, as a percentage of original paper products consumed. (See p. V-1.)

ROI. Return on investment. (Total capital requirements for integrated mills have been determined in a special way – see p. IX-A-6.)

SBK. Semi-bleached kraft pulp.

SBS. Solid bleached sulfate, used with reference to paperboard made from bleached kraft wood pulp.

Scavenger. A collector of waste paper. (See p. V-19.)

S/F. Secondary fiber; papermaking fiber made from waste paper.

Slush pulp. The undried mill product transferred to integrated paper and board making or pulp drying (See p. IX-A-5 ff.)

Sorting and baling. The cost of processing waste paper for delivery to the mill. (See p. VI-18.)

SW. Softwood.

Ton (T or ST). Short ton; 2000 pounds.

TPD. Tons per day.

UBK. Unbleached kraft pulp.

Virgin fiber. Papermaking fiber from original wood sources, including forest industry residues.

Waste paper dealer. One who buys waste paper stock from scavengers and typically sorts and bales. (See p. V-19.)

APPENDIX E-2

WOOD RESOURCE TERMS

(Reproduced from "The Outlook for Timber in the United States," Forest Resource Report No. 20, Forest Service, U.S. Department of Agriculture, October 1973)

Acceptable tree. Growing-stock tree of commercial species that meets specified standards of size and quality, but not qualifying as desirable tree.

Allowable harvest. The volume of timber that would be cut on commercial timberland during a given period under specified management plans aimed at sustained production of timber products.

Coarse residue. Plant residue that is suitable for chipping, such as slabs, edgings, and veneer cores.

Commercial timberland. Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization. (Note: Areas qualifying as commercial timberland have the capability of producing in excess of 20 cubic feet per acre per year of industrial wood in natural stands. Currently inaccessible and inoperable areas are included, except when the areas involved are small and unlikely to become suitable for production of industrial wood in the foreseeable future.)

Cord. A pile of stacked wood containing 128 cubic feet within its outside surfaces. The standard dimensions are 4 by 4 by 8 feet.

Cropland. Land under cultivation within the past 24 months, including cropland harvested, crop failures, cultivated summer fallow, idle cropland used only for pasture, orchards, and land in soil improving crops, but excluding land cultivated in developing improved pasture.

Deferred forest land. National Forest land that meets productivity standards for commercial timberland, but under study for possible inclusion in the Wilderness System.

Desirable tree. Growing-stock tree (a) having no serious defects in quality limiting present or prospective use for timber products, (b) of relatively high vigor, and (c) containing no pathogens that may result in death or serious deterioration before rotation age. (Note: This is the type of tree forest managers try to grow; that is, the tree favored in cultural operations. In over-rotation-age stands, desirable trees are low-risk trees.)

Diameter classes. A classification of trees based on diameter outside bark, measured at breast height (4-½ feet above the ground). (Note: D.b.h. is the common abbreviation for diameter at breast height. Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h., inclusive.)

Farm. A place of 10 or more acres from which the sale of agricultural products totaled $50 or more annually, or a place of less than 10 acres from which the sale of agricultural products totaled $250 or more during the previous year.

Farm and miscellaneous lands. Privately owned lands other than in forest industry ownership.

Fine residues. Residues not suitable for chipping, such as sawdust, shavings, and veneer clippings.

Forest land. Land at least 10 percent occupied by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width at least 120 feet wide to qualify as forest land. Unimproved roads and trails, streams, or other bodies of water or clearings in forest areas are classed as forest if less than 120 feet in width.) Also see definitions for land area, commercial timberland, noncommercial forest land, productive-reserved forest land, stocking, and unproductive forest land.

Forest site productivity class. A classification of forest land in terms of potential cubic-foot volume growth per acre at culmination of mean annual increment in fully stocked natural stands.

Forest type. A classification of forest land based upon the species forming a plurality of live-tree stocking. Type is determined on the basis of species plurality of all live trees that contribute to stocking.

Growing-stock trees. Live trees of commercial species qualifying as desirable or acceptable trees. Excludes rough, rotten, and dead trees.

Growing-stock volume. Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs.

Growth impact. Mortality plus growth loss.

Growth loss. Timber loss due to (a) delay in restocking or deficiencies in stocking resulting from damage by insects, disease, animals, fire, or adverse weather, and (b) the reduction in growth due to changes in timber type, defoliation, reduction of tree vigor, increase in cull percent, or deterioration of site due to destructive agents.

Hardwoods. Dicotyledonous trees, usually broad-leaved and deciduous.

Indian lands. Tribal lands held in fee by the Federal Government, but administered for Indian tribal groups, and Indian trust allotments.

Industrial wood. All roundwood products, except fuelwood.

Ingrowth. The number or net volume of trees that grow large enough during a specified year to qualify as saplings, poletimber, or sawtimber.

Land area.

a. *Bureau of the Census.* The area of dry land and land temporarily or partly covered by water, such as marshes, swamps and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries and canals less than ⅛ of a statute mile in width; and lakes, reservoirs and ponds less than 40 acres in area.

b. *Forest Survey.* Same as the Bureau of the Census except minimum width of streams, etc. is 120 feet and minimum size of lakes, etc. is 1 acre.

Limbwood. That part of the tree above the stump which does not meet the requirement for saw logs and upper-stem portions, including all live, sound branches to a minimum of 4 inches outside bark.

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Log scale. A measure of the board-foot content of roundwood. Local scale may include Scribner, Doyle or other rules. The international ¼-inch log rule is used as standard in the Forest Survey.

Logging residues. Unused portions of trees cut or killed by logging.

Mortality. Number or sound-wood volume of live trees dying from natural causes during a specified period.

Multiple-use management. The management of land resources aimed at achieving optimum yields of products and services from a given area without impairing the productive capacity of the site.

National Forest lands. Federal lands which have been legally designated as National Forests or purchase units, and other lands under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III lands.

Net annual growth. The increase in volume of trees during a specified year. Components of net annual growth include the increment in net volume of trees at the beginning of the specified year surviving to its end, plus the net volume of trees reaching the minimum size class during the year, minus the volume of trees that died during the year, and minus the net volume of trees that became rough or rotten trees during the year.

Net volume in board feet. The gross board-foot volume of trees less deductions for rot or other defect affecting use for lumber.

Net volume in cubic feet. Gross volume in cubic feet less deductions for rot.

Noncommercial forest land. (1) Unproductive forest land incapable of yielding crops of industrial wood, because of adverse site conditions and (2) productive forest land reserved for nontimber uses.

Noncommercial species. Tree species of typically small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Nonforest land. Land that has never supported forests and lands formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 40-acre areas of water classified by the Bureau of the Census as land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide, and clearings, etc., more than 1 acre in size, to qualify as nonforest land.)

Nonstocked areas. Commercial timberland less than 10 percent occupied with growing-stock trees.

Old-growth stands. Stands in which 50 percent or more of the area is occupied by old-growth timber.

Old-growth timber. Trees that are at least 100 years old.

Other removals. The net volume of growing-stock trees removed from the inventory by cultural operations such as timber-stand improvement, by land clearing and by changes in land use, and not utilized for timber products.

Pasture and rangeland. Land which is currently improved for grazing by cultivation, seeding or irrigation, and natural grasslands.

Plant byproducts. Wood products such as pulp chips obtained incidental to production of other manufactured products.

Plant residues. Waste materials from the manufacture of lumber, plywood and other wood products. Includes slabs, edgings, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and pulp screenings.

Poletimber stands. Stands at least 10 percent occupied with growing-stock trees of which half or more of this stocking is in poletimber and/or sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Prescribed burning. The application of fire to land under such conditions of weather, soil moisture, and other factors as presumably will accomplish specific silvicultural, wildlife, grazing, or fire-hazard-reduction purposes.

Primary wood-processing plants. Plants using round wood products such as saw logs, pulpwood bolts, veneer logs, etc.

Productive-reserved forest land. Forest land sufficiently productive to qualify as commercial timberland, but withdrawn from timber utilization through statute or administrative designation.

Removals. Volumes of timber removed from the growing-stock inventory, including timber products, logging residues, and other removals such as land clearing.

Rotation. The period of years between establishment of a stand of timber and the time when it is considered ready for final harvest and regeneration.

Rotten tree. Live tree of commercial species that does not contain, now or prospectively, at least one 12-foot saw log or two noncontiguous saw logs each 8 feet or longer, and/or does not meet regional specifications for freedom from defect primarily because of rot; that is, when more than 50 percent of the cull volume in a tree is rotten.

Rough tree. (1) Live tree of commercial species that does not contain, now or prospectively, at least one 12-foot saw log or two noncontiguous saw logs each 8 feet or longer, and/or does not meet regional specifications for freedom from defect primarily because of roughness or poor form, and (2) live tree of noncommercial species.

Roundwood products. Logs, bolts, or other round sections cut from trees for industrial or consumer use.

Roundwood equivalent. The volume of logs or other round products required to produce woodpulp, lumber, or other processed products.

Salvable dead trees. Standing or down dead trees that are considered merchantable by regional standards.

Sampling error. The probable error of an estimated total or average that arises from taking a sample rather than making a complete inventory or measurement.

Saplings. Live trees 1.0 inch to 5.0 inches in diameter at breast height.

Saw-log portion. That part of the bole of sawtimber trees between the stump and the saw-log top.

Saw logs. Logs meeting minimum regional standards of diameter, length, and defect. Logs must be at least 8 feet long, have a minimum diameter inside bark of 6 inches for softwoods and 8 inches for hardwoods and maximum defect as specified by regional standards.

Sawtimber stands. Stands at least 10 percent occupied with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Sawtimber trees. Live trees of commercial species containing at least one 12-foot saw log or two noncontiguous 8-foot logs, and meeting regional specifications for freedom from defect. Softwood trees must be at least 9.0 inches in diameter breast height, except in California, Oregon, Washington, and coastal Alaska where the minimum diameter is 11.0 inches. Hardwood trees must be at least 11.0 inches in diameter in all States.

Secondary wood-processing plants. Plants using primary manufactured products such as lumber, woodpulp, veneer, or plywood.

Seedling and sapling stands. Stands at least 10 percent occupied with growing-stock trees of which more than half of the stocking is saplings and/or seedlings.

Seedlings. Live trees less than 1.0 inch in diameter at breast height that are expected to survive according to regional standards.

Site preparation. Removal or deadening of unwanted vegetation prior to planting trees, including prescribed burning, use of herbicides, and disking and other mechanical means of removing vegetative cover.

Softwoods. Coniferous trees, usually evergreen having needles or scalelike leaves.

Stand improvement. Measures such as thinning, release cutting, girdling, weeding, or poisoning of unwanted trees aimed at improving growing conditions.

Stand-size class. A classification of forest land based on the size class of growing-stock trees on the area; that is, sawtimber, poletimber, or seedlings and saplings.

Stocking. The degree of occupancy of land by trees, measured by basal area and/or number of trees by size or age and spacing, compared to a stocking standard, i.e., the basal area and/or number of trees required to fully utilize the growth potential of the land.

Timber demand. The volume of timber that would be purchased at specified prices at a specified point in time under specified or implied assumptions relating to population, income, and other technological or institutional factors.

Timber supply (or timber harvest). Net volume of roundwood products available to forest industries from all sources at specified or implied price levels.

Tree size class. A classification of trees based on diameter at breast height, including sawtimber trees, poletimber trees, saplings and seedlings.

Trend level. Estimate based on a curve or regression equation constructed from observed values over time.

Unproductive forest land. Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions because of adverse site conditions such as sterile soils, dry climate, poor drainage, high elevation, steepness, or rockiness.

Unregulated forest land. Commercial timberland in National Forests not organized for timber production under sustained-yield principles, including experimental forests, recreation and administrative sites, and tracts of commercial timberland so remote from manufacturing centers that scheduling sustained periodic harvest is impractical.

Upper stems. That part of the bole of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches outside bark or to the point where the central stem breaks into limbs.

Wilderness area. An area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve natural conditions.

Young-growth stands. Stands in which 50 percent or more of the stand is occupied by sawtimber trees less than 100 years old.

APPENDIX F

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Tel: 212-524-0153
Sec: Dr. Harry J. Prebluda

COMPOSITE CAN & TUBE INSTITUTE
(formerly National Fibre Can & Tube Assn.)
1725 Eye St., NW
Washington, DC 20006
Tel: 202-223-4840
Exec. vice pres, sec: William E. Hughes

CONTAINERIZATION INSTITUTE INC.
(formerly Bulk Packaging & Containerization Institute)
15 East 40th St.
New York, NY 10016
Tel: 212-686-1824
Exec. sec: Glenn Mather

CORRUGATED CONTAINER INSTITUTE
P.O. Box 1572
108 S. Kentucky Ave., P.O. Box 1752
Lakeland, FL 33802
Tel: 813-683-2891
Mng dir: R. M. Reese

DATA PROCESSING SUPPLIES ASSN.
1116 Summer St., P.O. Box 1333
Stamford, CT 06904
Tel: 203-323-3143
Exec. dir: C. A. Greathouse

THE DISPOSABLES ASSN.
10 East 40th St.
New York, NY 10016
Tel: 212-686-9170
Exec. vice pres. and sec: Charles J. Carey

DRINKING STRAW INSTITUTE
1116 Summer St., PO Box 1333
Stamford, CT 06904
Tel: 203-323-3143
Exec. dir: C. A. Greathouse

EMPIRE STATE FOREST PRODUCTS ASSN
89 Ludlow St.
Saratoga Springs, NY 12866
Tel: 518-584-5995
Sec: Stanley W. Hamilton

APPENDIX F (Continued)

EMPIRE STATE PAPER ASSN., INC.
800 New Loudon Rd.
Latham, NY 12110
Tel: 518-785-9370
Sec: Edgar F. Radigan

ENVELOPE MANUFACTURERS ASSN.
1 Rockefeller Plaza
New York, NY 10020
Tel: 212-245-5885
Exec. vice pres: William H. McManus

FELT MANUFACTURERS COUNCIL OF NORTHERN TEXTILE ASSN.
211 Congress St.
Boston, MA 02110
Tel: 617-542-8220
Sec: William F. Sullivan

FIBRE BOX ASSN.
224 S. Michigan Ave.
Chicago, IL 60604
Tel: 312-663-0250
Sec: Thomas J. Muldoon

FLEXOGRAPHIC TECHNICAL ASSN. INC.
1416 Avenue M
Brooklyn, NY 11230
Tel: 212-998-2100
Sec: George J. Parisi

FOOD TRAY & BOARD ASSN DIV., SINGLE SERVICE INSTITUTE
250 Park Ave.
New York, NY 10017
Tel: 212-697-4545
Exec. vice pres: Robert W. Foster

FOREST PRODUCTS RESEARCH SOCIETY
2801 Marshall Ct.
Madison, WI 53705
Tel: 608-231-1361
Exec. sec: K. E. Huddleston

FOURDRINIER KRAFT BOARD INSTITUTE
280 Park Ave.
New York, NY 10017
Tel: 212-687-9226
Pres: A. Rodney Boren

FOURDRINIER WIRE COUNCIL
1625 Eye St., NW
Washington, DC 20006
Tel: 202-347-5611
Sec. treas: John D. Ferry

GARDEN STATE PAPER TRADE ASSN.
521 Fifth Ave.
New York, NY 10017
Tel: 212-687-2345
Dir. & counsel: Reuben A. Barshay

GRAPHIC ARTS TECHNICAL FOUNDATION
4615 Forbes Ave.
Pittsburgh, PA 15213
Tel: 412-621-6941
Exec. dir: William H. Webber

GRAVURE TECHNICAL ASSN.
60 East 42nd St.
New York, NY 10017
Tel: 212-661-8936
Exec. vice pres: W. R. Daum

GREATER BOSTON PAPER BOX ASSN.
15 Rusfield St.
Boston, MA 02119
Sec.-treas: Victor G. Mitchell

GUMMED INDUSTRIES ASSN., INC.
551 Fifth Ave.
New York, NY 10017
Tel: 212-986-8213
Mng. dir: Robert W. McKellar

INDUSTRIAL SAFETY EQUIPMENT ASSN., INC.
1 Stone Pl, PO Box 515
Bronxville, NY 10708
Tel: 914-779-9602
Sec.-treas: C. N. Sumwalt, Jr.

INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS
345 E. 47th St.
New York, NY 10017
Tel: 212-752-6800
Gen. mgr: Donald G. Fink

INSTRUMENT SOCIETY OF AMERICA, PULP AND PAPER INDUSTRY DIVISION
400 Stanwix St.
Pittsburgh, PA 15222
Tel: 412-281-3171
Exec. dir: Herbert S. Kindler
Div. dir: R. L. Stoughton
(Consolidated Papers, Inc.)

INTERNATIONAL BROTHERHOOD OF PULP, SULPHITE AND PAPER MILL WORKERS
118 Broadway
John P. Burke Building
Fort Edwards, NY 12828
Tel: 518-747-3361
Pres.-sec: Joseph P. Tonelli

LABEL MANUFACTURERS NATIONAL ASSN., INC.
Room 511, Wilson Plaza Bldg.
2425 Wilson Blvd.
Arlington, VA 22201
Tel: 703-528-8444
Exec. dir: Francis R. Cawley

MAGAZINE PUBLISHERS ASSN.
575 Lexington Ave.
New York, NY 10022
Tel: 212-727-0055

METROPOLITAN BAG & PAPER DISTRIBUTORS ASSN., INC.
521 Fifth Ave.
New York, NY 10017
Tel: 212-687-2345
Dir. & counsel: Reuben A. Barshay

MIAMI VALLEY PAPER SHIPPERS ASSN., INC.
845 East Ave.
Hamilton, OH 45011
Tel: 513-863-2065
Sec: John D. Nichols

MIDWEST PAPER ASSN.
PO Box 374
Carpentersville, IL 60110
Tel: 312-381-8989
Exec dir: Warren W. Findling

NATIONAL ACOUSTICAL CONTRACTORS ASSN.
1201 Waukegan Rd.
Glenville, IL 60025
Tel: 312-724-7700
Exec. sec: C. A. Wangman

NATIONAL ASSN. OF GREETING CARD PUBLISHERS
200 Park Av., New York, N. Y. 10017
Tel: 212-972-0072

NATIONAL ASSN. OF PURCHASING MANAGEMENT
11 Park Place, New York, N. Y. 10007
Tel: 212-267-3677
Executive vice president: G. W. Howard Ahl

NATIONAL ASSN. OF SANITARY MILK BOTTLE CLOSURE MANUFACTURERS
P.O. Box 26
Canastota, N. Y. 13032
Secretary: Laurence F. Read

NATIONAL ASSN. OF SECONDARY MATERIAL INDUSTRIES, INC.
330 Madison Ave., New York, N. Y. 10017
Tel: 212-867-7330
Secretary-treasurer: M. J. Mighdoll

NATIONAL BUSINESS FORMS ASSN.
300 N. Lee St., Alexandria, Va. 22314
Executive director: Meredith Smith, Jr.

NATIONAL COUNCIL OF THE PAPER INDUSTRY FOR AIR & STREAM IMPROVEMENT INC.
260 Madison Av., New York, N. Y. 10016
Tel: 212-889-5416
Executive director: Ernest J. Bolduc, Jr.

NATIONAL FLEXIBLE PACKAGING ASSN.
12025 Shaker Boulevard
Cleveland, Ohio 44120
Tel: 216-921-0078
Managing director: E. C. Merkle

NATIONAL OFFICE PRODUCTS ASSN.
1500 Wilson Blvd, Suite 1200
Arlington, Va. 22209
Tel: 703-525-2668
Sec: William Goss

NATIONAL PAPER BOX ASSN.
231 Kings Highway East
Haddonfield, N. J. 08033
Tel: 609-429-7377
Executive director: Norman T. Baldwin

NATIONAL PAPER TRADE ASSN., INC.
420 Lexington Ave., New York, N. Y. 10017
Tel: 212-686-4542
Executive vice pres: Glenn Leach

NATIONAL REFUSE SACK COUNCIL, INC.
(Division of Paper Shipping Sack Mfgrs. Assn.)
60 East 42nd St., New York, N. Y. 10017
Tel: 212-867-6420
Executive director: C. G. Peterman

NATIONAL SAFETY COUNCIL, PULP & PAPER SECTION
425 N. Michigan Ave., Chicago, Ill. 60611
Tel: 312-527-4800
Staff representative: Thomas F. Powers

NATIONAL SCHOOL SUPPLY & EQUIPMENT ASSN.
79 W. Monroe St., Chicago, Ill. 60603
Tel: 312-236-6970
Executive vice president: Dave McCurrach

NATIONAL SHOEBOARD CONFERENCE, INC.
P.O. Box 1495, Boston, Mass. 02104
Tel. 617-864-6900
Secretary: Stanley M. Jacks

NEWSPRINT INFORMATION COMMITTEE
150 East 42nd St.
New York, NY 10017
Tel: 212-697-5600
Exec. sec: John H. O'Connell

NORTHWEST PULP & PAPER ASSN
2633 Eastlake Ave. E
Seattle, WA 98102
Tel: 206-325-3277
Exec. sec: Donald J. Benson

NORTHWESTERN PAPER TRADE ASSN.
900 Farmers & Mechanics Bank Building
Minneapolis, MN 54402
Tel: 612-335-9331
Sec: Roger W. Schnobrich

APPENDIX F (Continued

PACIFIC COAST ASSN. OF PULP AND PAPER MANUFACTURERS
621 S.W. Morrison St., Suite 930
Portland, OR 97205
Tel: 503-228-7491
Sec: R. W. Hess

PACIFIC COAST PAPER BOX MANUFACTURERS ASSN.
5959 W. Century Blvd.
Los Angeles, CA 90045
Tel: 213-670-4432
Sec: Edwin A. Mozley

PACKAGE DESIGNER'S COUNCIL
PO Box 3753, Grand Central Sta.
New York, NY 10017
Tel: 212-682-1980
Exec. dir: Mrs. Glory Harris

PACKAGING INSTITUTE, U.S.A.
342 Madison Ave.
New York, NY 10017
Tel: 212-687-8875
Exec. dir: Charles A. Feld

PAPER BAG INSTITUTE INC.
41 East 42nd St.
New York, NY 10017
Tel 212-697-9020
Exec. sec: William R. Gardiner

PAPER CLUB OF NEW YORK
3 Ann St.
Bergenfield, NJ 07621
Sec: Daniel O. Reich

PAPER INDUSTRY MANAGEMENT ASSN.
2570 Devon Ave.
Des Plaines, IL 60018
Tel: 312-827-7126
Exec. sec: H. Mac Gregor Tuttle
Divisions and chairmen: Conn. Valley (R. C. Malloch), Miami Valley (R. E. Kash), Michigan (F. J. Fragomili), New York/Canadian (A. St. Jacques), Northeastern (C. H. Reed), Northwestern (J. Dunlap), Pacific Coast (W. H. Youngchild), Pen-Jer-Del (L. J. Schroth), Southeastern (H. P. Brodnax), Southern (C. S. Flenniken), Southwestern (C. F. Lowery), Industrial Affiliates (G. P. Wennes, Jr.)

PAPER MAKERS ADVERTISING ASSN. INC.
90 Elm St.
Westfield, MA 01085
Tel: 413-568-1986
Exec. sec: Fred S. Van Voorhis

PAPER MERCHANTS ASSN. OF NEW YORK
93 Worth St.
New York, NY 10013
Tel: 212-267-9680
Sec: John G. Crowe

PAPER MILL MEN'S CLUB OF SOUTHERN CALIFORNIA
21026 Renwick Rd.
Glendora, CA 91740
Tel: 213-963-2356
Sec: Peter Belculfine

PAPER SHIPPING SACK MANUFACTURERS ASSN., INC.
60 E. 42nd St.
New York, NY 10017
Tel: 212-867-6420
Exec. vice-pres: C. G. Peterman

PAPER STATIONERY AND TABLET MANUFACTURERS ASSN., INC.
444 Madison Ave., Suite 2301
New York, NY 10022
Tel 212-753-4496
Exec. sec: Frank Cowan Jr.

PAPER STOCK INSTITUTE OF AMERICA
330 Madison Ave.
New York, NY 10017
Tel: 212-867-7330
Sec: Elinor B. Roberts

PAPER TRADE ASSOCIATION OF PHILADELPHIA, INC.
1900 Arch St.
Philadelphia, PA 19103
Tel: 215-564-3484
Exec. sec: Robert G. Clifton

PAPERBOARD PACKAGING COUNCIL
(Merger of Folding Paper Box Assn. and the Institute for Better Packaging)
1800 K St., NW
Washington, DC 20006
Tel: 202-872-0180
Pres: Russell C. Flom

PLATE, CUP & CONTAINER INSTITUTE DIV., SINGLE SERVICE INSTITUTE INC.
250 Park Ave.
New York, NY 10017
Tel: 212-697-4545
Exec. dir: Robert W. Foster

PRESSURE SENSITIVE TAPE COUNCIL
1201 Waukegan Rd.
Glenview, IL 60025
Tel: 312-724-7700
Sec: R. G. Bradeen, Jr.

PRINTING INDUSTRIES OF AMERICA, INC.
1730 N. Lynn St.
Arlington, VA 22209
c/o Sorg Printing Co. of Calif.
424 E. 15th St.
Los Angeles, CA 90015
Sec: James J. Woods

PRINTING PAPER CREDIT GROUP
1900 Cherry St.
Philadelphia, PA 19103
Sec: Miss Anne I. Meehan

PULP CHEMICALS ASSN.
60 East 42nd St.
New York, NY 10017
Tel: 212-697-4816
Sec: Douglas E. Campbell

PULP & PAPER MACHINERY ASSN.
The Black Clawson Co.
200 Park Ave.
New York, NY 10017
Tel: 212-972-4440
Sec: Carl C. Landegger

PULP & PAPER MANUFACTURERS ASSN. (LAKE STATES)
Irving Zuelke Building, 12th Floor
Appleton, WI 54911
Tel: 414-734-5778
Exec. sec: V. G. Cornelius

PULP, PAPER & PAPERBOARD EXPORT ASSN. OF THE U.S.
90 Park Ave.
New York, NY 10016
Tel: 212-682-4347
Sec. treas: R. L. Kerridge

PULP AND PAPER TRAFFIC LEAGUE
c/o Fibre Box Association
224 So. Michigan Ave.
Chicago, IL 60604
Tel: 312-663-0250
Dir. of Trans: T. R. Lynch
Gen. traffic mgr: R. M. Renwick
(c/o Kimberly-Clark of Canada Ltd.
2 Carlton St., Toronto, Ont., Canada)

SALESMEN'S ASSN. PAPER & ALLIED INDUSTRIES
18 Palisade Ave.
Yonkers, NY 10701
Tel: 914-476-1780
Sec: Jerome Kinoy

SALES ASSN. OF THE PAPER INDUSTRY
260 Madison Ave.
New York, NY 10016
Tel: 212-889-6200
Treas: Miss Anne G. Toomey

SOCIETY OF PACKAGING AND HANDLING ENGINEERS
14 E Jackson St.
Chicago, IL 60604
Tel: 312-427-6123

SODA PULP MANUFACTURERS ASSN.
2 Greenwich Plaza
Greenwich, CT 06830
Tel: 203-661-3648
Sec: William M. Barrett

SOUTHEASTERNERS, INC.
PO Box 7272
Richmond, VA 23224
Sec.-treas: Charles M. Bechtler

WHOLESALE STATIONERS ASSN., INC.
O'Hare Office Bldg II
10600 W Higgins Rd.
Rosemont, IL 60018
Tel: 312-297-6882
Sec: Bernard Seltzer

WISCONSIN PAPER GROUP
268 Sanford St.
Menasha, WI 54952
Tel: 414-722-2863
Gen. mgr: James W. Vander Hyden

WISCONSIN PAPER AND PULP MANUFACTURERS' TRAFFIC ASSOCIATION
79 W Monroe St., Room 1221
Chicago, IL 60603
Tel: 312-236-8950
Gen. traffic mgr. and sec: J. E. Hart

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Source: Lockwood's Directory, 1973